DOMESTIC ENGINEERING

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Public-Comfort Stations Being Increasingly Recognized as a Municipal Necessity

This entire issue is devoted to an illustrative and descriptive exposition of the rapid growth of the public-comfort-station movement throughout the country.

It is offered to the trade as a bulletin on the subject which can be used effectively in the education of municipal authorities to the importance of the movement and the necessity of their following the example of up-to-date cities.

No attempt has been made to detract from the value of the presentation by long-winded detailed descriptions of the equipment of every public-comfort station shown. Our efforts have been confined to the setting forth in clear language of the essential features of the different types of stations, the illustrations and plans supplying unmistakably the salient points of information which would be required by the investigator.

We have departed also from the stereotyped treatment of such subjects by avoiding presentation of the story in a long drawn-out article with descriptions winding tortuously through a maze of illustrations, each paragraph of which probably bears relationship to some illustration 12 pages ahead of it or behind it. Each station is dealt with distinctively, and the illustrations concerning it will be found close at hand.

In October, 1908, "Domestic Engineering" presented to the trade the first public-comfort-station number issued of any important and comprehensive character. Its missionary work was quite effective, and yet its value was somewhat marred by the fact that the public-comfort-station movement in the United States was still in its infancy, and of necessity many illustrations and descriptions had to be presented of European types. These were excellent and served their purpose at that time. It is, however, no longer necessary to draw on the resources of the old continent, as this number will show. We have in our midst a number of up-to-date installations, underground, above-ground, up in the air, triangular, square, oblong and circular, covering amply every problem of site with which a municipality can be confronted.

The public-comfort-station movement needs your support. This issue is intended to be a weapon in your hands for the securing of a lucrative trade. The establishment of a series of public-comfort stations in your city proportionately to its needs offers not only a prospective series of installations but every installation when made remains constantly as a public educator to the value of sanitary installation in residences, office-buildings and municipal structures. There are thousands of citizens in your city whose business never brings them into an office-building or public structure and thus offers them the educative influences of up-to-date sanitary fixtures. They are, therefore, because of this, difficult to convince of the advantages of similar installation in their own residences. It is hard to make a man buy that which he does not think he needs. The public-comfort station offers its privileges at all times to the humblest citizen as well as to the highest, and its cleanliness and sanitary fixtures cannot but prove powerful factors in stimulating the public desire for domestic advantages of a like character.

Another important feature is that installations of this kind are furnished with the highest type of equipment, goods with a profitable price, a trade-mark and a garantee of efficiency. They are educators to the desirability of purchasing the best article, at a proportionate figure, and will assist you in overcoming competition offered by cheap goods of unknown authorship and doubtful durability.

The growth of a town or city depends largely upon the good-will of its visitors. No town or city is self-contained, or if it is, it is dead and only keeps a semblance of life to save funeral expenses. The number of conveniences of any kind offered to the visitors—conveniences for doing business, of purchasing supplies, of selling merchandise, of hotel accommodations, of railroad facilities, of municipal traffic, of eating-houses—all these exercise their influence on the visitors and contribute their share

to the amount of good-will the town shall establish. A public-comfort station or a series of them, properly located, will prove one of the most important factors in adding to this stock of good-will.

Public-comfort-station installation has also a distinct influence for good on the town's citizens. It raises the mental, moral and physical tone of the citizenship. Among the many arguments which have been offered in favor of public-comfort stations, we have not yet noticed the all-important one of the detrimental effect on physical health through their absence. Nature has so constituted us that our physical needs should meet with immediate and regular attention. Each town or city offers its citizens on every hand opportunities for eating, drinking and resting when nature demands it. A city without adequate toilet-conveniences for its traveling citizens and visitors is like a boiler without a chimney, a kitchen stove without a smoke-pipe; for it must be recognized that as fuel is supplied to the body in the form of food and drink, provision for the elimination of the wastes of physical combustion is just as important as the supply of the materials.

Up-to-date physicians are well aware of the evil effects caused by the undue or prolonged retention of the human wastes in the body. You will be interested in reading an extract from a medical college class-lecture, given by Dr. James Russell Price, of Chicago, on the subject of Eliminations.

"To help you remember the divisions of this subject we will use the fingers of the hand. The first will be Respiration, the second Perspiration, the third Urination, the fourth Evacuation, and the fifth Menstruation. The latter not being common to both sexes, we will leave for a separate lecture.

"Nature has her incontrovertible law in carrying out her processes of elimination, and these laws are only violated by the human kind, or where mankind undertakes to control the animal by domestication.

"Nearly all diseases, pain and suffering inflicting the human race may be traced to the failure or lack of attention to Nature's eliminating calls.

"Over-indulgence in eating has its dire results, especially when the organs of elimination are not allowed to promptly perform their functions. For instance, if Respiration is not properly performed, certain carbonic substances are retained, causing impurity of the blood and a tendency to the 'White Plague.' The opportunity for the lungs to act requires good ventilation of buildings where people congregate. Secondly, the perspiratory glands when closed by sudden contraction or congestion are unable to carry off certain salts and other poisons, and the responsibility is thrown on other glands of the body not suited for that purpose, and therefore they do a bungling job and are weakened by the effort, causing coughs, colds, pains and aches in many parts of the body.

"The elimination by urination is very important in sustaining good health. Yet, no doubt, there is a great hindrance to the performance of this duty, as well as that of evacuating the aliamentary tract, because of lack of suitable public places conveniently located and distinctly prominent.

"Nature has her system of making demand when the receptacle is filled by causing the sensory nerves controlling the valves to send a message. If this is not responded to, the overpressure deadens the sensibility of the warning nerves and this retention of urine no doubt is the primary cause of rheumatism, systitis, Bright's disease of the kidneys and many other ailments. The retention of fecal matter in the alimentary tract, allowing certain ferments and putrefactions to take place, is the harbinger for multitudinous ailments, such as dyspepsia, headaches, liver and heart trouble, and all the attendant symptoms following in their wake.

"We would consider an engineer very deficient who allowed the flues of his boiler to become too heavily encrusted, or who failed to remove the ashes and cinders from under the firebox. City authorities would be considered derelict in their duties to allow the sewers to become inoperative. I am fully convinced that cities should supply sufficient health stations for her people instead of having them running to and fro to hunt places in the stores, hotels, etc. Children should be taught at home, as well as in the public school, that there is no more shame in asking where to find a public toilet than there is in asking where there is a restaurant, hotel or moving-picture show.

The reader must clearly bear in mind the object of this issue. It is designed to give a cinematographic review of the public-comfort installations. Sufficient data were collected to fill an issue three times this size and the preparation of this sanitary bulletin was largely a process of constant sifting and elimination. Photographs showing stations equipped with apparatus being supplanted by new types have been in several cases withheld at the request of some of the manufacturers who have co-operated with us. We have given prominence to new plans and installations in order to show that public-comfort stations are being considered and constructed at the present time and that we are not dependent on antique installations in our argument for a country-wide extension of the movement. As many exteriors as possible have been shown in order to supply suggestions for architectural treatment under varying municipal conditions.

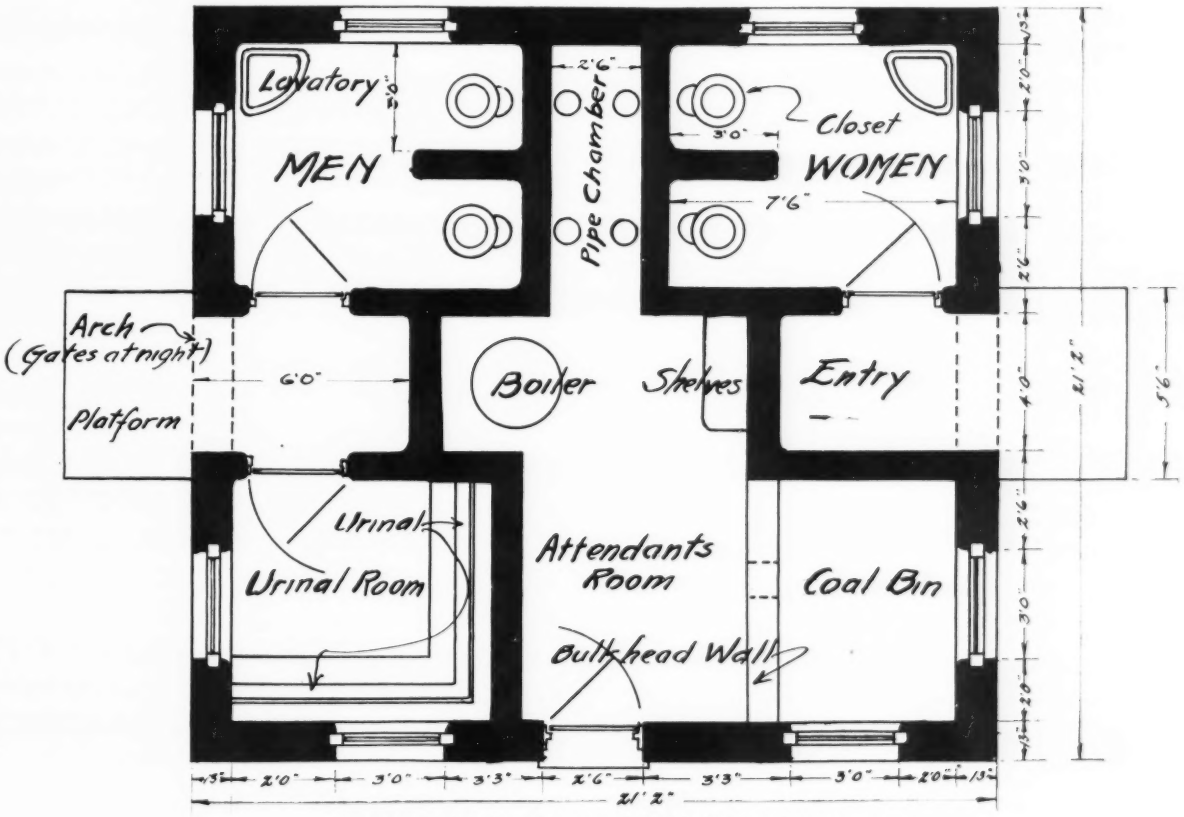
This issue is dedicated to you. See that your municipal officers have an opportunity to look over its pages with you.

Essential Points in Public-Comfort-Station Design

By A. R. McGonegal, Inspector of Plumbing, Washington, D. C.

Public-comfort stations, as far as the design is concerned, are divided into stations above ground and stations below ground and can be roughly divided further into classes according to size.

The first consideration is location. Stations should be built at points of greatest congestion of traffic or greatest probable use. The mere fact that a city may have at its disposal a parking space or other plot of ground some little distance from such a point does not appear to the writer to be a sufficient excuse for the placing of a station at other than a logical site, although stations have been built in the past by cities at points removed from populous corners for this very reason.



Suggested Plan for Underground Public-Comfort Station.

The consensus of opinion by authorities on the subject appears to be strongly against constructing a station of such small size that constant service of an attendant is not needed or provided. There are, however, locations at bridge terminals, on much-used parkways, in Zoological Gardens, minor parks, etc., where the duties of the bridge-tender, the park-watchmen or other city employees can be extended to include the care of these stations. A good example of the planning of such a station is shown in the cut.

It will be noted that in this plan the space allotted to the female side is very much smaller than allotted to the male side. This works out in actual practice as it has been found that the female patrons constitute very little over one-eighth of the total attendance.

This suggested plan provides for a station constructed in an almost indestructible manner, the walls on the inside and the partitions being built of vitrified or salt-glazed brick which cannot be easily marked upon or marred, all corners being rounded, the fixtures being of the most substantial pattern, closets with integral porcelain seats, doors and window frames of metal. A sufficient coal storage is provided for about three tons of coal and a small hot-water or steam heater is provided for, with a ventilating fan in the attic space, which will ventilate through the urinal-backs and local vents on each closet.

Many objections are advanced against the construction of stations without constant attendants, chief among them being the possibility of pernicious practices on the part of certain moral degenerates, the possibility of intoxicated or vicious men entering the women's side and the probability that on cold days tramps will use the stations as a sleeping or loafing room.

It is most important, on account of cost not only of original construction, but the cost of materials and labor necessary to keep a station clean, and cost for repairs, that a comfort-station should be as compact as possible, every unnecessary square foot in plan adding a definite percentage to the costs. This self-evident fact has rarely been

adhered to by architects or others called upon to design a single station in their own town, but this appears to be due to their lack of knowledge of the peculiar conditions involved in the design of a building of this character, because practically all of the engineers who have designed or assisted in designing several stations, have adhered to the policy of dividing the space up between the male and female sides somewhat in proportion to the amount of use they are expected to get. Notable examples of the former class are: Morningside Park Station in New York City, the station in Fountain Square, Cincinnati, O., and many subway stations in New York City where approximately the same amount of space is allotted to the female side as to the male side, and the number of fixtures does not appear to have been proportioned to the probable male and female patronage. The station in Morningside Park, however, probably should have more than the usual percentage of fixtures to the allotted space for women on account of the great number of nurses and young children to be found in this park on all pleasant days.

The writer has had the honor of designing several stations and acting as consulting engineer for architects for many more, and has been actively identified with problems of supervision and maintenance as well as designing and construction, and would advise on account of the less cost of upkeep, the inconspicuousness and other considerations that, whatever possible, stations should be built below ground. This naturally involves many of the matters which would not have to be considered for a station built above ground.

The first and most important point in the design of an underground station is to make it absolutely damp-proof, because a damp station cannot be kept clean under any circumstances, nor can the odors be kept within bounds. Practical experience has shown that it is necessary to have a ventilating plant for the underground station capable of completely renewing the air in the toilet rooms not less than every five minutes, and oftener if possible. In one station the writer has in mind, the renewal period averages just under three minutes. This means, of course, that not only the ventilating plant must be the heart of the station, but that the heating plant must be fully capable of heating all the air handled. These considerations require a combined mechanical plant which will occupy probably more space than the women's toilet room and large enough to heat and ventilate a small office building, figured according to the usual rules in practice. Low-pressure steam appears to be a suitable medium for heating and two fans are necessary, one to drive the fresh air over the coils and one to remove the foul air from the building. Some plants are so proportioned that the maximum work can be done only with both fans working full capacity and other plants are so designed that either or both of them can be used as would appear necessary. The latter is probably the best on account of the fact that electric motors are prone to short-circuits and other similar troubles. Two large stations in this country were originally designed with gas-heating apparatus and many similar stations were designed to be heated by gas-radiators. Of course, experience has taught that the means employed for heating was in these instances sadly inadequate and in practically every case the original installation has been replaced by a steam plant, hot-water plants being undesirable on account of the added space necessary for larger coils and boiler.

An underground station should be designed around its mechanical plant and should have hollow walls, hollow ceilings, and for convenience in handling the water-proofing in an efficient manner, it is wise to have a double floor, all pipes being run in a space above the water-proofing, so that but few punctures in the waterproofing envelope are necessary. The best material for such a structure is undoubtedly concrete with a lining of structural terra cotta, and such a finish on the inside as may be dictated by the architectural viewpoint of the designer.

A compact toilet room can be lighted by electricity at a comparatively small cost per day, which cost is more than offset by the cost of additional heating precautions against dampness which would have to be taken if vault lights, monitor windows or other similar devices were employed to obtain sunlight. The writer believes that while sunlight is usually an essential in a toilet room, in the conditions of a building of this character where an attendant is on duty at all times, the disadvantages of communication with the outside air more than outweigh the advantages which would be gained by the use of vault lights. All door frames and other woodwork should be metal covered, preferably of copper, because it does not need constant painting or other care.

The plumbing fixtures, on account of the hard usage they will be given by all classes of people, should be the very best that money can buy. The water closets preferably of automatic type, with seat action and pressure-tank, as manufactured by practically all of the leading plumbing-supply houses, have been found very satisfactory in this work when used with a siphon-jet bowl, for practically anything which will go through the entrance to the siphon-limb of the closet will be carried by the rush of water under street pressure, clear to the junction with the main sewer. In one city out of a total of 42 closets, but two closets were removed during a period of three years for obstructions.

Probably the best type of urinal for work of this character is the marble or slate fixture with the ventilated back and with the water flowing down continuously over the face of the slabs from a grooved reservoir at the top. This fixture is made by several plumbing-supply houses and has attained a high state of perfection.

The ventilating shaft may be treated architecturally in a very satisfactory manner, but it should be borne in mind that the free area of opening in the shaft should be fully capable of handling the fan-discharges. In a very large number of stations in the country today, this is an exceedingly weak point.

An item of interest to be considered is the usual attempt on the part of designers to arrange entrances to the male and female sides as far apart as possible and to screen entrance doors by the use of plants, etc. This does not appear in keeping with the spirit of the times, but is rather a concession to the ideas of false modesty.

A very considerable amount of cleansing material, a supply of soap-powder, toilet-paper, liquid soap, etc., are bulky and used in large quantities in buildings of this character. Very few stations in the country have anything like adequate storage-space for material, and the writer believes that a stock-room is a very necessary adjunct, as these materials can be obtained in large quantities at a much reduced rate. A room should be large enough to hold a barrel of cleaning powder, a barrel of liquid soap, one hundred gross of toilet-soap, a hundred dozen towels, twenty cases of toilet paper and a sufficiency of towels, mops, brooms, etc., for a period of not less than three months at a time. Coal-storage should be provided for certainly not less than 5 tons, and with a fairly large heating and ventilating plant, 10 tons would appear to be the proper amount. A space must be also provided for wood and ash storage.

A station with a capacity of 4 water closets and 2 lava-

tories on the women's side and 10 closets, 2 lavatories and 20 urinals on the men's side has been found adequate and of about the right proportions. Examination of the plans of a great majority of the stations of this country indicate that the number of urinals provided is usually not more than the number of closets and in many cases less. This is about the smallest-sized station that it appears economical to construct with the idea of providing paid attendants on duty all the time.

Pay-compartments can be added if desirable. If they are arranged large enough to provide dressing space and contain a lavatory in addition to the water closet and there is some efficient method of checking the receipts, the cash returns have been found to go a long way towards paying for the supplies used.

The city of Washington, for instance, reports an average cash receipt from pay-compartments in three stations as about $250 a month, at the present time. The total cost of operating the stations for the same period is about $850.

Every women's toilet room should have a rest-room with a couch and a lavatory—the room large enough to permit of a surgical operation in case of an emergency.

All stations should be equipped with telephones, directories, "bubble" drinking fountains, bootblack stand, combs for sale (not to be loaned), safety pins, whisk brooms, sanitary napkins, parcel checking and such other devices as will permit their use by the public to the fullest extent.

One station in this country has tried the experiment of providing one of the three pay-compartments on the men's side with a shower-bath, for which a fee of 10 cents is charged, including towel.

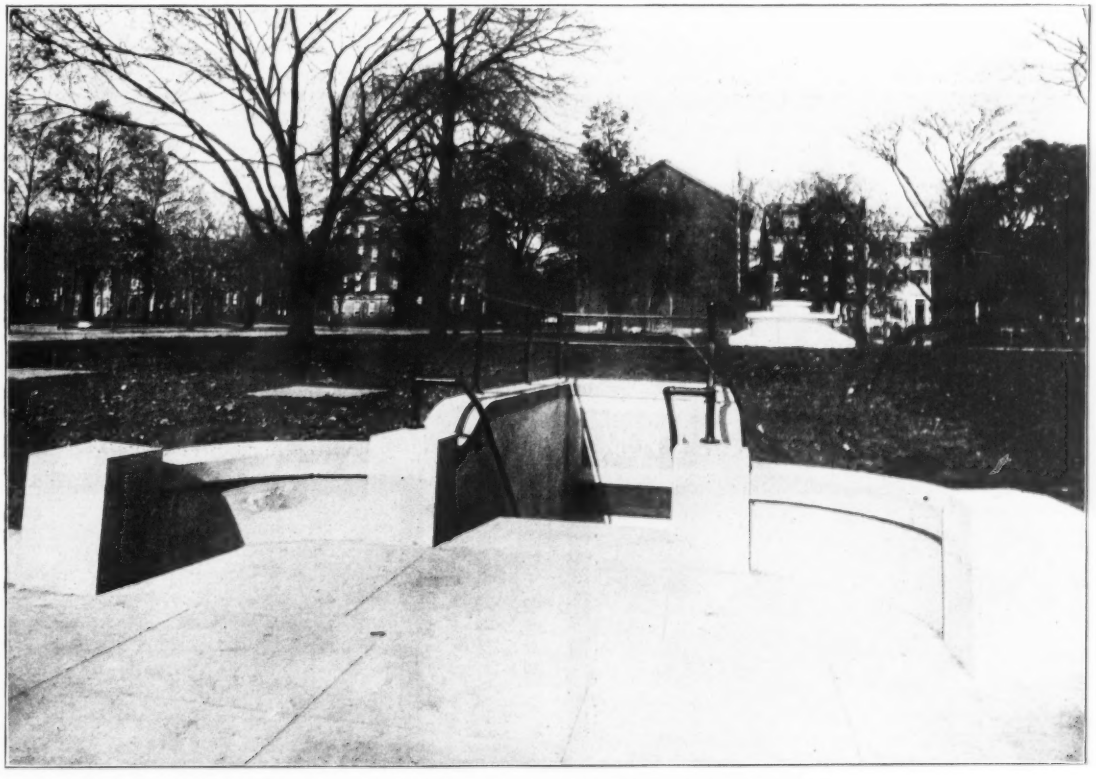
Another feature installed in several stations is what is known as a mother-and-child pay-compartment, there being besides a lavatory and the usual adult's water closet, a child's water closet with a height of about 8½ in. above the floor.

A public-comfort station should be provided with an operative force of sufficient quantity and quality to insure its maintenance in good condition.

Public-Comfort Stations in Washington, D. C.

One would naturally expect that the governing city of the country would be possessed of a public-comfort-station system of exceptional merit. Washington has three sanitary stations, the last erected being claimed to be the finest in the country. The first two stations were completed in 1908, one above ground and one underground. The third station, completed in 1910, embodies all the excellent features of the first two and possesses merits of arrangement and installation peculiarly its own. The illustrations show these to advantage.

The structure is underground. The exterior walls are of concrete and the interior walls of 4-in. structural terra cotta, with allowance for vent-space in the walls. The entire building is waterproofed. The roof-construction is heavily reinforced concrete. The interior wall-surface of the station is of Italian marble to the height of seven



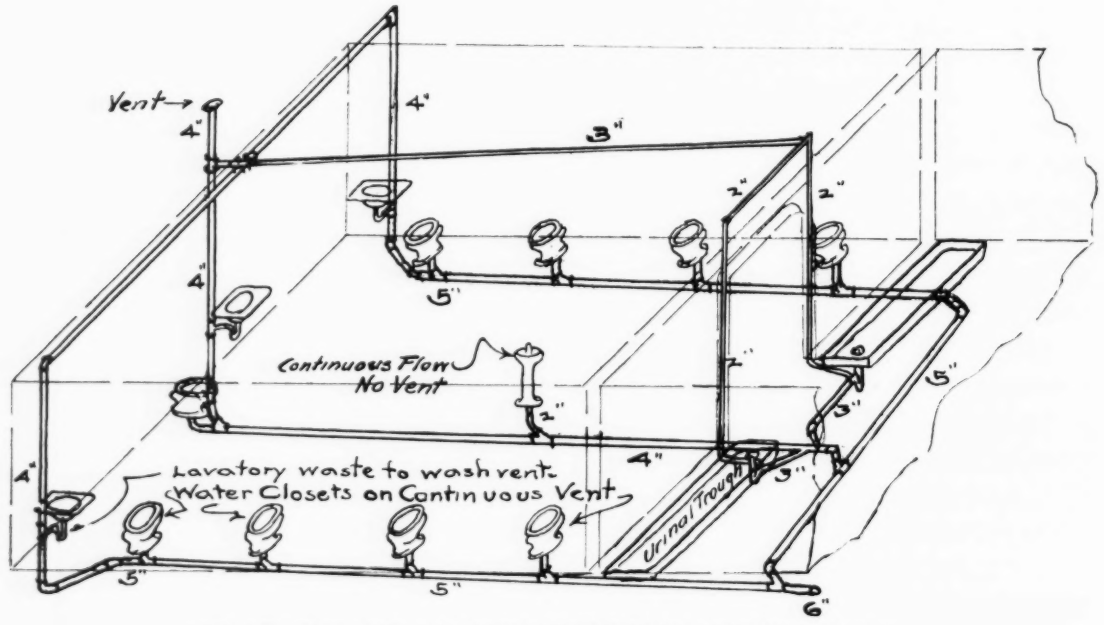
Men's Entrance to Station No. 3, Showing Ventilation-Shaft in the Background.

feet, above which is a facing of white enameled brick. The floors are composed of white and colored cement and terrazzo.

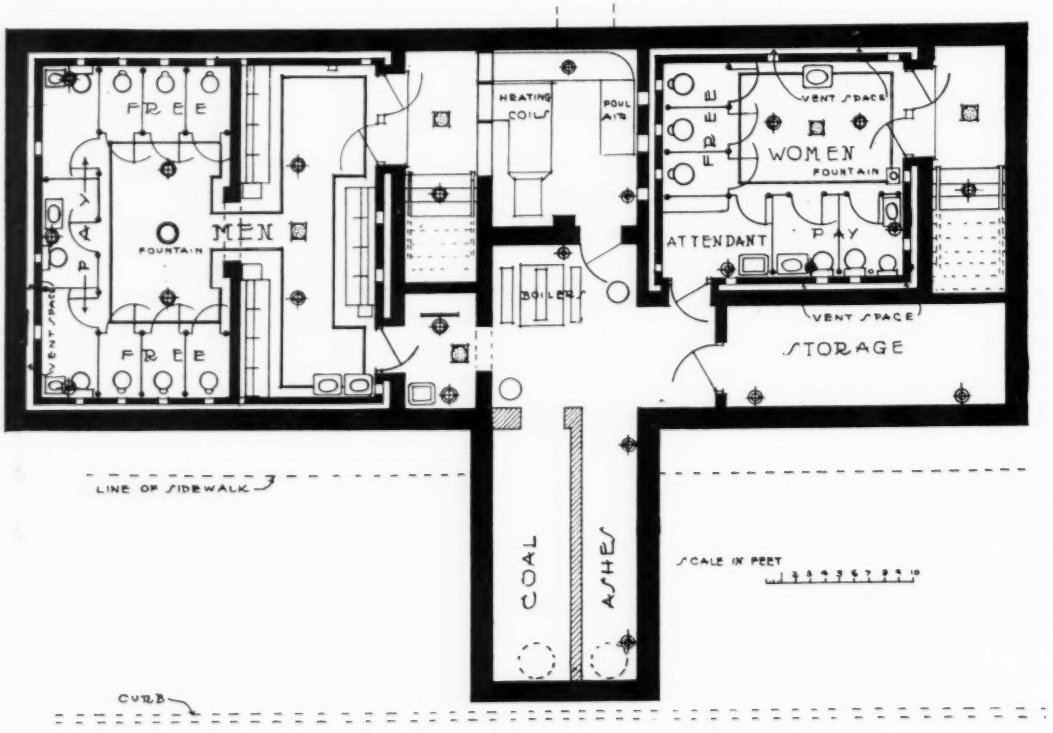
The interior facing of the entrance stairways is of white

finished surface of the top floor, all pipes being run in this space, which has been filled with dry cinders.

A study of the plans will show clearly the serviceable compactness of this splendid public-comfort station. The



Bird's-Eye View of Male Toilet-Room, Showing Method of Continuous Venting.



Ground Plan of No. 3, Washington Station. Dotted Lines at Top Show Vent-Duct.

portland cement and marble dust, waterproofed. The boiler, engine and supply-rooms have a natural concrete finish. The main floor is approximately 26 in. below the

water-closets installed are of the pressure-tank type with an extra-heavy siphon-jet bowl, enamel steel tank, polished brass flush-pipes and black oxidized valves and seat-trim-

mings. The discharge of the bowl-contents is under full street-pressure, and the siphon-limb being full bore, a perfect flushing is secured through to the sewer-line. Every water-closet is numbered, so as to facilitate keeping of repair-records.

The urinals are of slate, fed from overflow troughs at the top of the stall-back, the water overflowing through serrated edges forming a continually flowing film of water. The quantity of flow is regulated by adjustable cocks, the consumption of water being about 20 gal. per hour per stall.

The lavatories are of vitreous construction, cast with a shelf at the back and with a central leg. In the pay-compartments smaller lavatories are used, supported with brackets.

The slop-sinks are one-piece vitreous, and the drinking-fountains are also of vitreous ware. All traps and waste pipes are of brass. The floor-drains consist of extra-deep seal P-traps with heavy perforated brass covers and provision for flushing out.

Ventilation is secured by means of two electric fans, one supplying fresh air and the other extracting the foul air. A complete change of air in the toilet-rooms can be obtained every three minutes. Steel plate fans, paddle-wheel type, are used, with 4-pole motors at slow speed, direct-connected for 220-volt direct current and the rheostats are of the over-load and no-load release type. Fresh air is taken from the main entrance and foul air is discharged through a 30-in. terra-cotta duct leading back about 50 ft. from the rear of the building to an ornamental shaft of concrete. This vent-shaft is of white portland cement in the artistic form of a flower-urn, containing a circular opening 3 ft. in diameter. This opening also serves as a smoke-pipe exhaust from the boilers. The boiler serves about 1,200 sq. ft. of radiation. The steam-coil has a total length of 500 lin. ft., enclosed in a steel casing supported 6 ft. above the floor-line.

The hot-water system installed is a combination heater and storage-tank, hot water being supplied to the slop-sinks and in all the lavatories. The coal-storage room will hold 10 tons and the ash-storage compartment about 2 cu. yds. The stock-room will hold 200 cases of toilet-paper and several barrels of cleaning material and quantities of liquid soap, bar soap and other supplies.

The building is lighted both day and night with ceiling lights of 25-watt Tungsten lamps. The station cost approximately $22,000 and was constructed in about eight months. It was built under the supervision of Snowden Ashford, municipal architect of the District of Columbia, by the Boyle-Robertson Construction Co., and was designed by Harding & Upman, with Alfred R. McGonegal, Washington's popular plumbing inspector, as consulting engineer.

The water-closets and slop-sinks wherever possible are connected on the continuous-vent principle, an interesting plan of which is shown. Vents of the small fixtures are cut back into the lines above the ceiling. The vent-pipes terminate in a galvanized-iron box in the ground surface, somewhat on the order of the curb-boxes used in New York for fresh air inlets. A 2-in. water supply of AA lead, with 2½ in. taps in the public main, is run to and into the structure, and a pressure tank with means for renewing the air-pressure supply is placed on the line to prevent water-hammer as far as possible. Both cold and hot water lines are placed on a circuit.

Comptroller Taussig of St. Louis, Mo., has ordered a new public-comfort station installed at once at Union Market, the present unsanitary conditions demanding immediate improvement.

PUBLIC-COMFORT STATION PLANNED AT HANNIBAL, MO.

The Mt. Olivet cemetery association, desiring to provide the very best service for the public, has under consideration at this time the building of a public-comfort station and sexton's residence in the beautiful cemetery of Mt. Olivet.

The proposed building will occupy the brow of the hill at the entrance gates and is designed in an old English brick and timber effect.

The purpose of the building is to give the public some place of shelter that may be used by patrons of the cemetery, if a shower should arise while they may be on the grounds. The building is planned by Architect M. S. Martin and will contain five large living rooms for the sexton, so arranged as to be practically separate from the public-comfort station and yet contiguous enough to admit of the proper care and oversight of all the building by the sexton.

The sexton's quarters will have its own entrances and porches, so arranged that the public may have complete privacy in the use of that portion of the building set aside for them.

The sexton's quarters will be equipped with up-to-date bath room, living room, dining room, kitchen and sleeping rooms and all the usual modern conveniences.

The portion reserved for the public will contain a large public room or rotunda with imported German tile floors, terra cotta and quarry tile walls with a handsome old English beamed ceiling.

This room will have beautiful, full length French windows on three sides opening onto a large roomy shelter porch.

On the remaining wall will be a large brick open fireplace, and adjacent to this room will be toilets for the use of the public.

The public-shelter porch will be somewhat of a combined shelter and observatory. This porch will provide means of shelter from showers that often arise when patrons of the cemetery are about the grounds and will accommodate at least 100 people.

The floor will be tile, the piers of brick and the roof open timber effect. In winter, warmth and shelter may be obtained in the closed room. In this room the cemetery association will provide such furniture as will be in keeping with its purpose, for persons who may be faint or ill, where they may find refuge. The public portion of the building will overlook the entrance, gates and main road and a large portion of the grounds.

The whole building on the exterior will be in a simple dignified type with a tile roof and broad eaves.

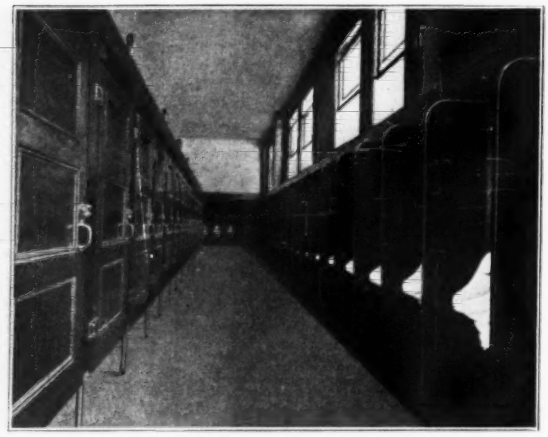
The board of directors of the cemetery association is composed of Geo. W. Dulany, president; Col. John L. RoBards, secretary and treasurer; Archy C. RoBards, E. D. Brewington and J. O. Farmer.

This type of public-comfort convenience will be most attractive and will set a wholesome example in cemetery-design. It is expected that the contract for this new station will be let in the spring of 1912.

Hamilton, O., is getting in line with the public-comfort station movement. It is planned to have the city council, the board of county commissioners and 10 members of the chamber of commerce meet at an early date and plan for the establishment of a public-comfort station. President Reiss of the chamber of commerce has already appointed the 10 members of the committee which will represent that body at the conference.

BOSTON TO HAVE FIVE MORE PUBLIC-COMFORT STATIONS.

The Boston City Council has lately appropriated $50,000 for the construction of five additional stations. These will all be placed underground. It is probable that within



Photograph by courtesy of the Trenton Potteries Co., Trenton, N. J.

Men's Section in the South Station Public-Comfort Station in Boston.

a brief period provision will be made for two more stations, thus putting Boston in the forefront of the up-to-date municipalities in supplying public conveniences.

The maintenance of the Boston stations is not dependent in any degree upon the receipts derived from them, but is covered by regular appropriations to the health department. A nominal charge is made, however, towels, for instance, being supplied for one cent each, which is the cost of laundering.

GENERAL DESIGN OF A PUBLIC-COMFORT STATION.

In the general design of a public-comfort station, the architects and engineers should provide as simple a plan as possible, with straight passages of sufficient width. The compartments and passages should bear such relation that they can be under the ready supervision of attendants at all times. The visitor on entering should also be able to determine the exact location of the convenience he desires, without hesitating and blocking up the entrance-way. The purpose of each portion of the room should be so self-evident that consultation with an attendant should be unnecessary.

Stairways should be of proper breadth, with easy steps. The stairways should be straight wherever possible, and strong hand-rails should be provided. The lighting of the stairways should be efficient.

In public places, such as parks and recreation-grounds, it would be advisable to include in the construction of the station a room with cot and central table suitable for Red Cross emergencies. It would not add very much to the cost of the station, and would be of great assistance to the municipal authorities in case of serious accidents during large parades or on gala days.

In connection with this we might mention the necessity of providing each station with a public telephone. This would add to the revenue of the station and would also enable the attendant to keep in touch with the municipal authorities under all conditions.

PUBLIC-COMFORT STATION, CLEVELAND, O.

This station is located on the public square in the heart of the city, where all street-car lines meet. The cost of building was $9,128. The following figures on cost of maintenance will prove instructive:

One year—From October 15, 1910, to October 15, 1911.

Material and supplies	$ 517.79
Furniture and implements	34.66
Fuel and light	492.21
Repairs	234.01
Labor	4,945.87
Total	$6,224.54

The maintenance cost is provided for out of the money appropriated for park purposes by the city council.

Persons attending in 1911 (estimated)—Men, 3,509,651; women, 696,916.

There are two compartments, one for the men and one for the women. There are no pay-departments. The comfort-station is open day and night, and is operated by three men attendants and three women attendants, who work in shifts of eight hours each. Soap and individual towels are furnished free. Toilet facilities and wash-stands are provided. The building is only one story. The ground floor is used as a waiting room for street-car patrons. The closets and wash-basins are in the basement. For these details we are indebted to Robert J. Doyle, superintendent of parks.

FIRST MUNICIPAL PUBLIC-COMFORT STATION IN THE UNITED STATES.

The credit of establishing the first public convenience of any kind is claimed by New York City. This was opened in Astor Place in May, 1869, as a result of more than 12 years' fighting by the sanitarians of New York City. It was an apology for a public-comfort installation as now known. It was poorly placed, crudely constructed, and badly kept. It served a most useful purpose, however, by showing how a public-comfort station should not be installed. We therefore owe it a debt of gratitude. The public-comfort station movement then went to sleep for a quarter of a century, and was revived in 1896 as it seemed to offer possibilities of graft. Several attempts were made by private corporations to secure a monopoly on the erection of convenience kiosks, in Paris style, the sides of which were to be embellished principally by advertising. There were enough righteous men resident in New York at that time to nip this grafting scheme in the bud. Since 1900 New York City has erected a number of public-comfort stations of different types of construction, distributed throughout the city in congested places. These stations are under borough control.

COLUMBUS BIDS TOO HIGH AGAIN.

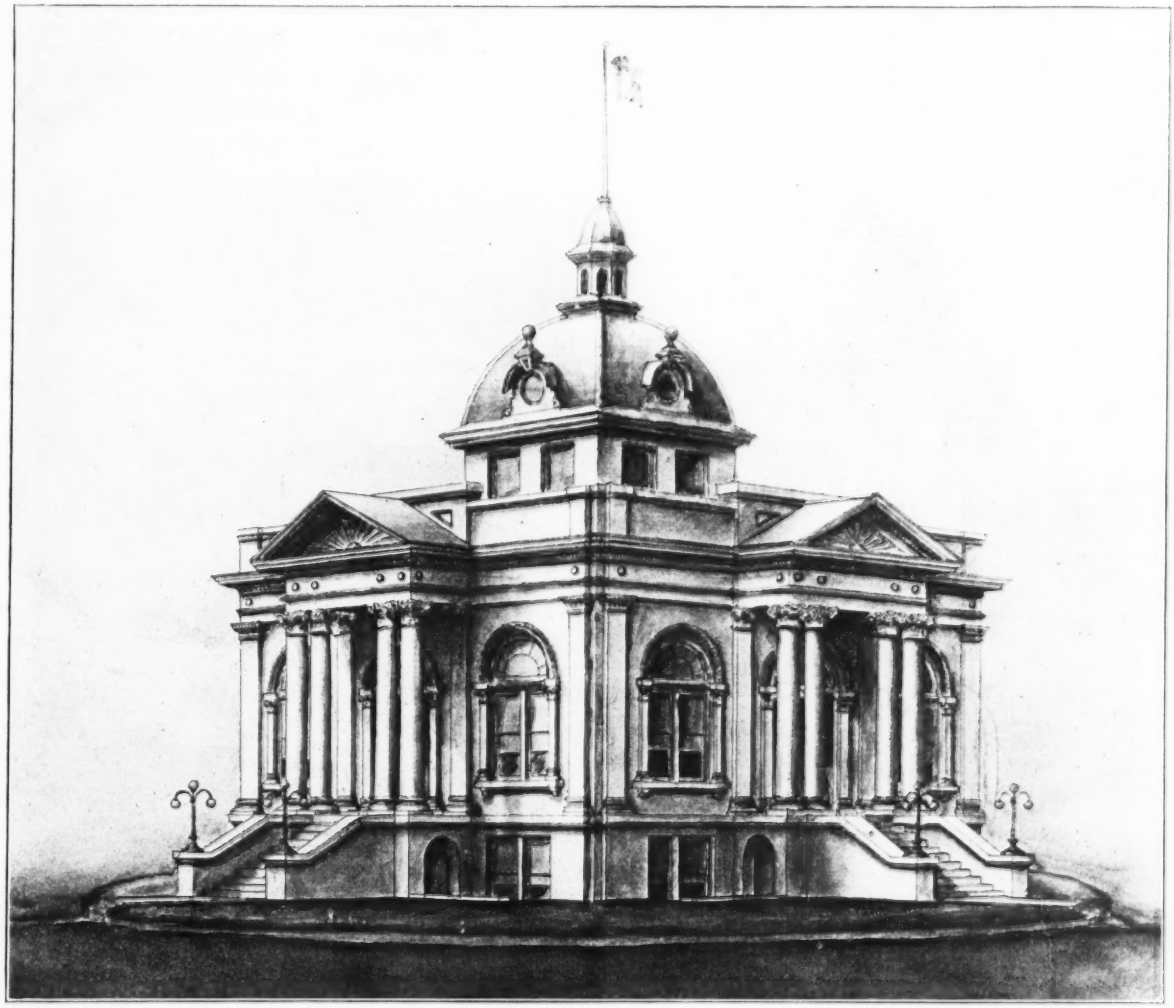
City authorities at Columbus, O., are experiencing considerable trouble over the bids for the public-comfort station in Goodale Park. Three times they have advertised for bids, but each time the estimates so far exceed the appropriation that all had to be thrown out and advertisements again inserted. The plans are now undergoing further revision, in the hopes that a fourth attempt will be successful and the station will be ready for use by the time it is needed in the spring.

Paris, Texas, is to Build a Magnificent Public-Comfort Station Early Next Year

Paris, Tex., has set itself the task of outrivaling its namesake in Europe. It has a good start with 20,000 population and a public-comfort station in sight destined to make the opera-house in Paris, France, look like trente centimes.

The illustration gives abundant evidence of the beauty of this contemplated station. The city of Paris boasts of many up-to-date enterprises. In this country we do not know how many important small cities we have until an opportunity like the present occurs and we find out that New York and Chicago do not possess all the manufacturing enterprises there are. Paris claims the largest handle factory and the largest crate factory in the world, and the largest furniture factory in the state. The city has a splendid water-system and a municipal abattoir and refrigerating-plant, in which all meat is inspected and slaughtered under the supervision of the city and then re-inspected by an efficient force of inspectors.

The water-system belongs to and is operated by the city. The capacity of the pump at the main station is 4,000,000 gal. daily, and the emergency station has a capacity of 1,000,000 gal. daily. The supply of water is so abundant that it is estimated that if all the umbrella-supply houses of Paris went out of business because it didn't rain for three years, the thirsty in Paris would still be able to secure a drink.



The Attractive Exterior of the Paris (Tex.) Public-Comfort Station.

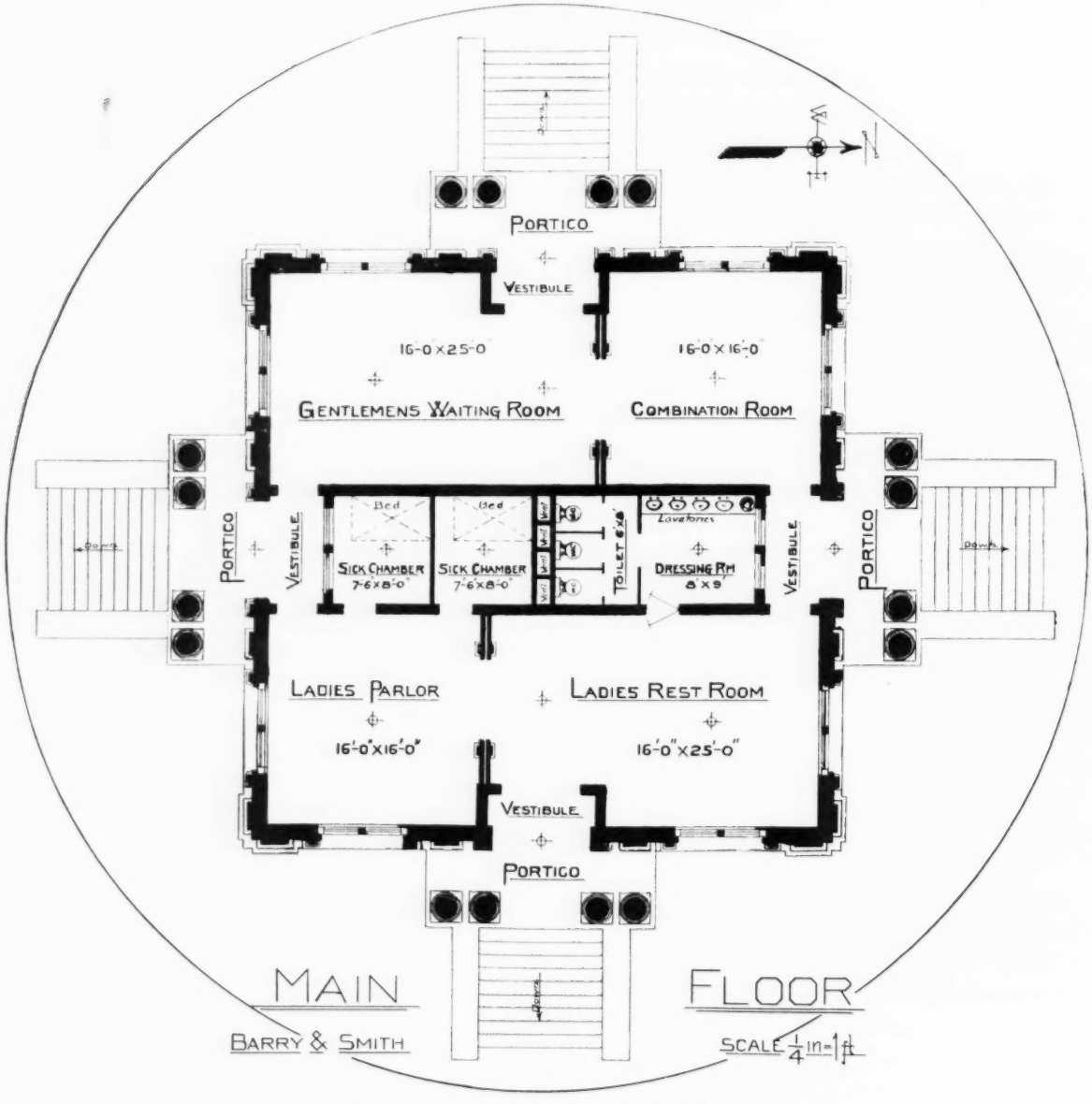
One necessity to secure up-to-date installation of all public conveniences is a good board of trade or commercial club. Paris has both, the Progressive Club and the Board of Trade. These bodies have done excellent work fostering the civic spirit which has made a public-comfort station possible.

All the work of commercial clubs, however, can easily be hampered unless a city has a live executive. Paris has

that also, for Ed. H. McCuistion, mayor of the city, is an enthusiastic promotor of all municipal improvements. Mr. McCuistion, recently writing to "Domestic Engineering" concerning the new convenience station, said:

"We believe that our contemplated plant possesses some distinctive features. The public-comfort conveniences as such are by no means new as municipal enterprises, different atmosphere altogether. We determined to erect a building whose appearance would not even suggest a comfort-station. We would even go further, we would call it the Paris Memorial Hall and Rest Rooms.

"The grounds surrounding the building will have the appearance of a park. We will erect statues and busts of our former citizens who have rendered signal service



Main-Floor Plan of Paris Public-Comfort Station.

There is just a tinge of embarrassment experienced by many persons when they enter a comfort-station which has associated with it no other purpose. Then, too, when this is the sole purpose, there is the hasty entrance and hurried retreat, and feeling that the place has no other purpose, less care is exercised by the patronizing public and greater effort is necessary to keep such a station in a proper sanitary condition. Our object is to create a

to the state or nation, either in peace or war. We will also perpetuate the memory of municipal benefactors. Then we will have memorial tablets which will perpetuate the names of all our mayors, county judges, and other officers who have been conspicuous in local history. On other tablets will be found the names of those who have lost their lives in the public service or in saving or attempting to save others, etc.

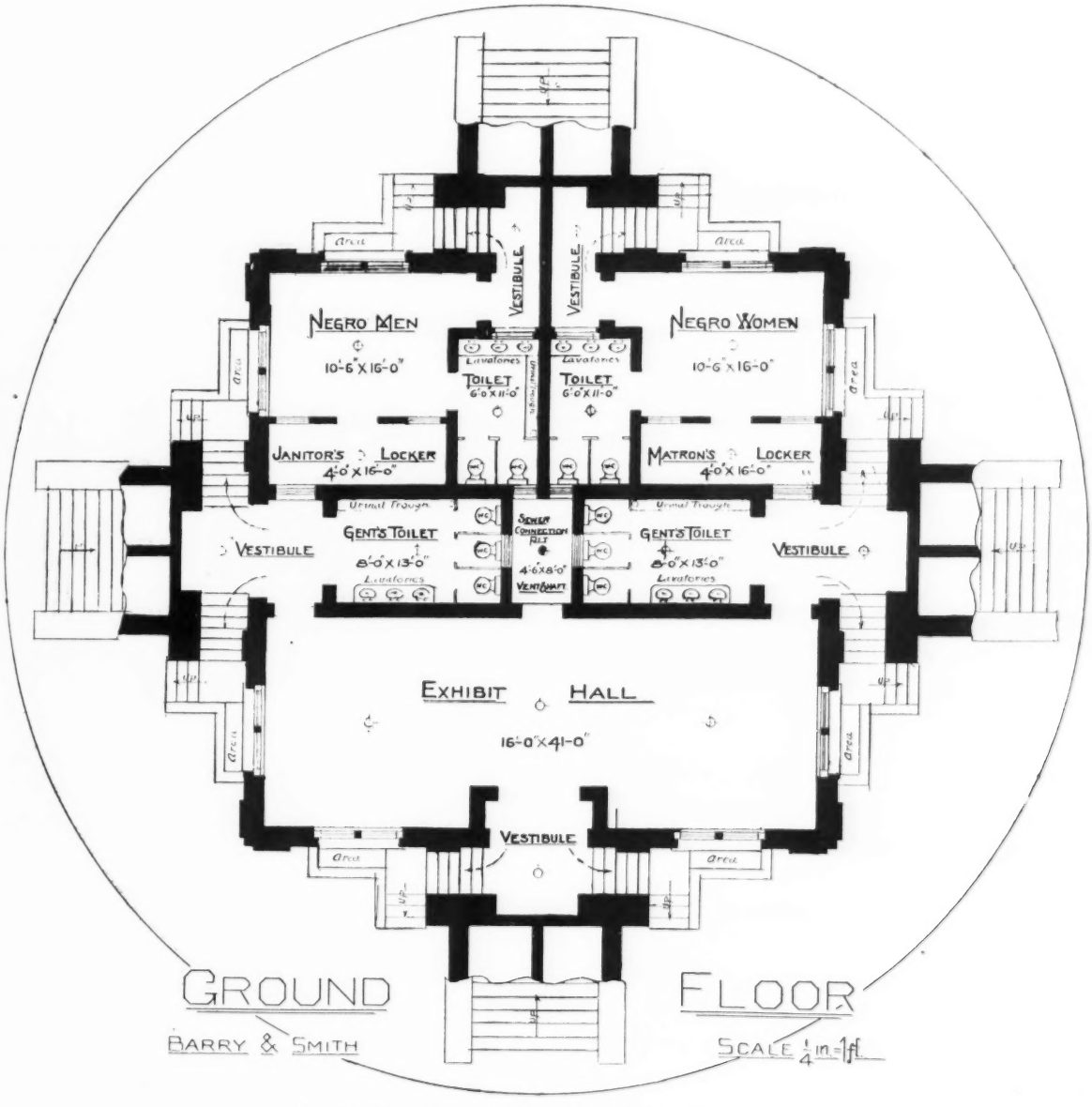
"Then we have the rest-room features. Ladies coming from the country especially, will go to this public rest-room, remove their wraps, check them, add, if need be, a few deft touches to their toilet, and be ready for shopping.

"We are proud of the enterprise and believe that in it we have achieved a measure of success at least in compressing into one enterprise the cardinal elements of civic beauty together with those of great practical utility."

An interesting feature of the plans shown is the provision necessary in the South for the separation of the races. The whole scheme of the station shows careful consideration and the citizens of Paris will watch with interest the completion of the valuable municipal installation.

WILKES-BARRE, PA., ALSO WANTS A PUBLIC-COMFORT STATION.

Wilkes-Barre, Pa., is not in a position to erect a public-comfort station just yet, but while waiting for the funds the municipal authorities are making their preparations. City Clerk Gates is in correspondence with the authorities of several cities which have already installed stations, and is well-supplied with photographs, plans and full descriptions of stations now in operation. In this way the citizens of Wilkes-Barre will be able to profit by the experiences of other municipalities in selecting the plans and fixtures which have proved most satisfactory to stand the test of usage. It is intended to construct an up-to-date station just as soon as funds are available.

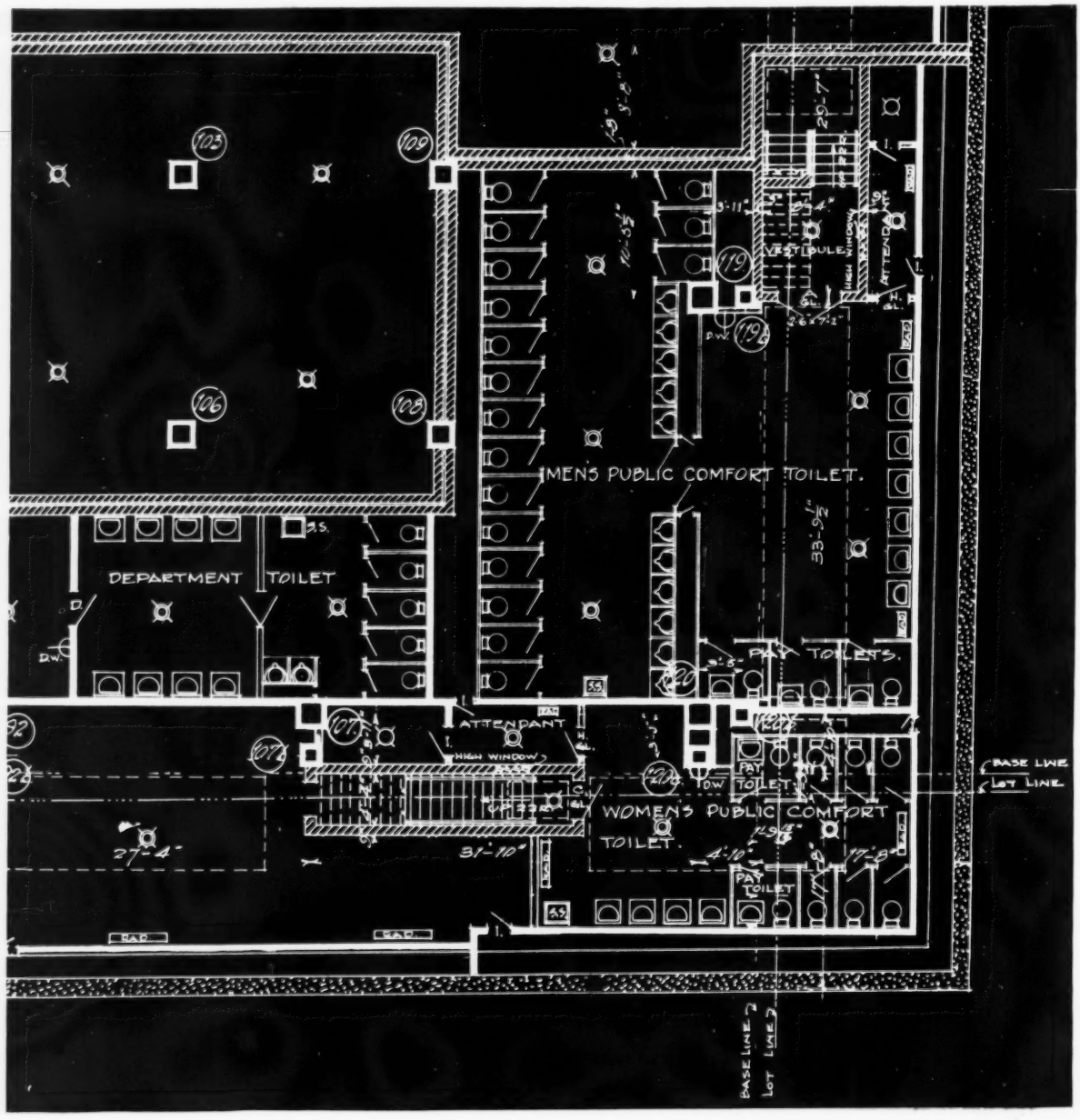


Ground-Floor Plan of Paris Public-Comfort Station.

Chicago's City Hall Public-Comfort-Station

Chicago is a big city but it has been behind in the race so far in the matter of attention to public needs along public-comfort station lines. A start has been made, however, by the installation of a public-convenience station in the new City Hall, the station being installed on La Salle and Washington streets, at the south-west corner of the building, in the basement. The women's entrance is on La Salle street and the men's entrance on Washington street. These two divisions are entirely separate from each other.

The Chicago public-comfort station was opened on October 16th to the public. There are two attendants provided for each section—two men and two women—and these relieve each other during the hours from 7 a. m. to 11 p. m. We understand that the appropriation for their services is $50 per month each.

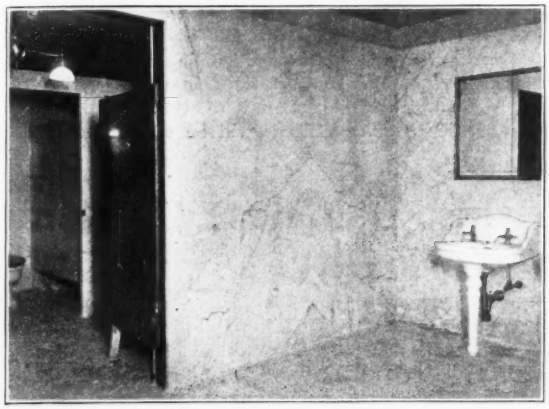


Floor-Plan of Public-Comfort Station in City Hall, Chicago.

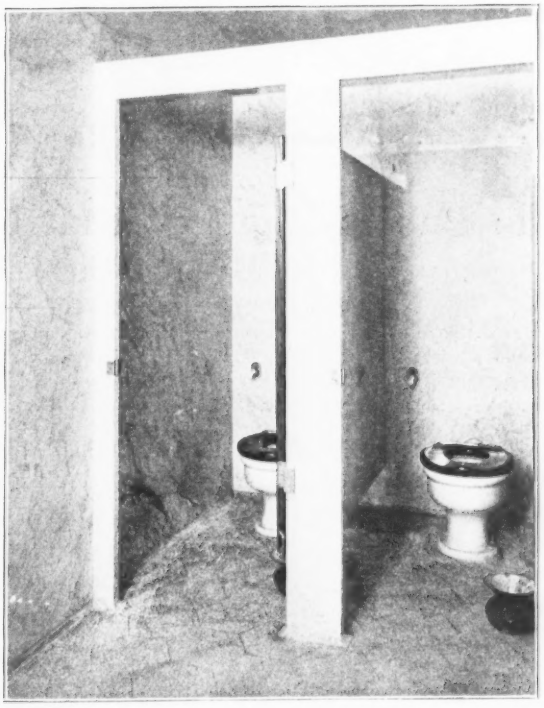
The divisions have a mosaic-tile construction, Italian marble walls and plaster ceiling. All ventilation is mechanical, a plenum and vacuum system being installed, the incoming air being delivered at the ceiling and the outgoing air finding its exit at the bottom of the room.

Each toilet and urinal is vented separately, and the heating of the station is furnished in connection with the heating-system of the main building.

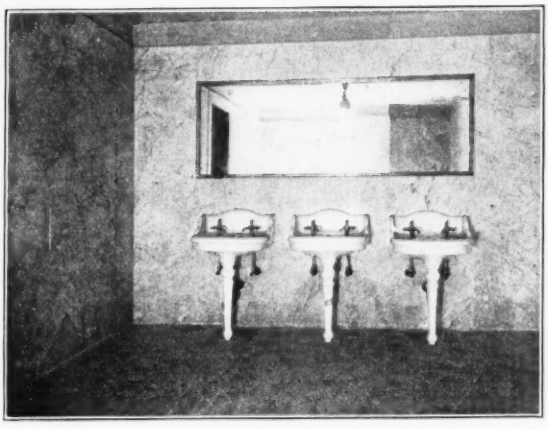
Views of Chicago's First Municipal Comfort-Station



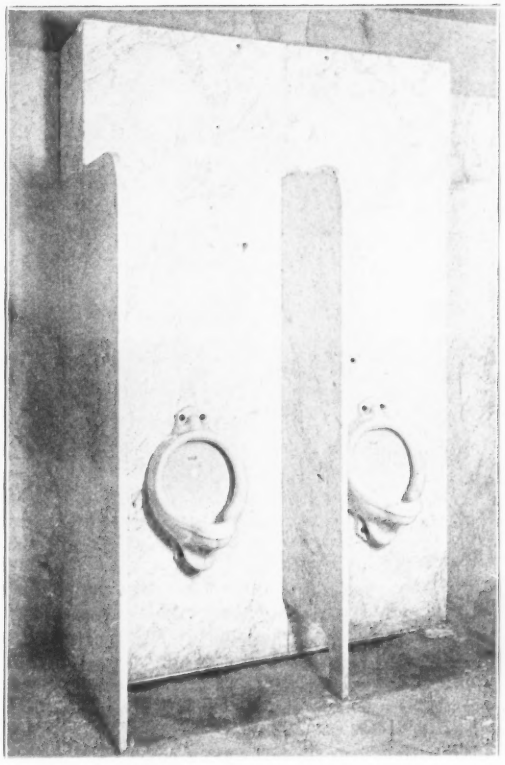
A Corner in Women's Department.



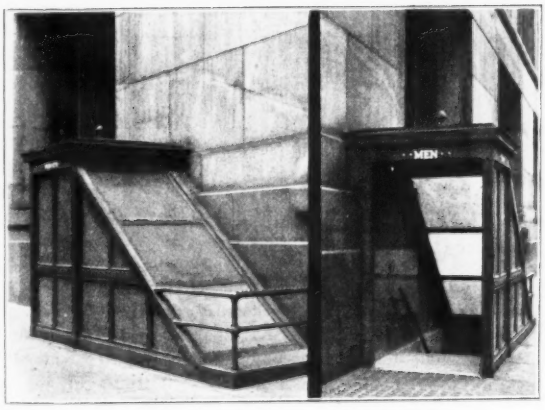
Closets in Men's Department.



Men's Lavatories.



Urinals in Men's Compartment.



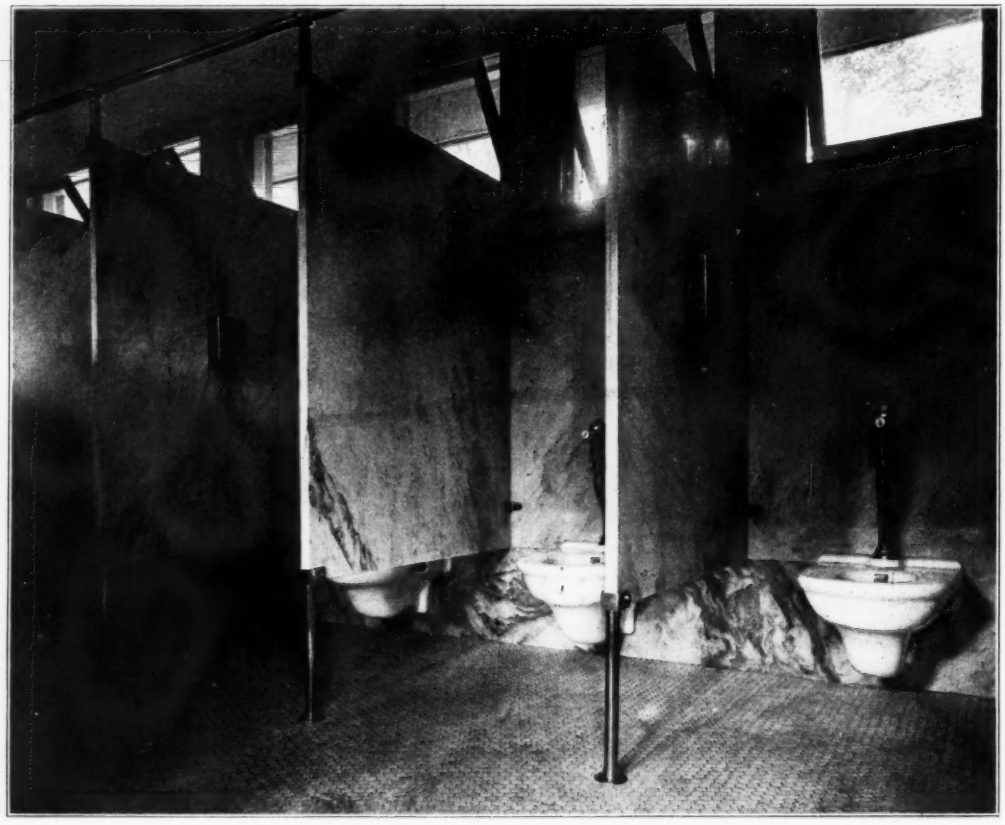
Women's and Men's Entrances.

On the men's side there are 17 water-closets, 10 urinals, 5 lavatories and 3 pay-toilets, and on the women's side there are 8 water-closets, 4 lavatories and 2 pay-toilets. Adjoining these departments is a department toilet-room for the building, containing 5 water-closets, 2 urinals and 8 lavatories.

The illustrations show effectively the type of entrances and the general arrangement of the fixtures. It is the first municipal public-comfort station in Chicago. The public parks, of course, have erected public-comfort stations, but these are provided for by the Park Commission. It is to be expected that the advantages manifested by this station will arouse public spirit so that they may be demanded and provided in other sections of the city. If Chicago remembers its motto, "I Will," the public convenience of its citizens will be well cared for.

The Public-Comfort Station in the Zoological Garden in Bronx Park, New York City

One of the most important considerations in planning a public-comfort station is this, that it should be so constructed that it can be kept clean and sanitary with the least possible labor. This consideration was given proper attention by the architect who designed the public-comfort station in the Zoological Garden in Bronx Park, New York City, with the result that the cost of caretaking and maintenance of this station is less than that of any other public-comfort station in New York City, and this in spite of the fact that it is visited by more people than any other three stations in the city combined.



Photograph by courtesy of the Federal-Huber Co., Chicago.
Battery of Water-Closets in the Public-Comfort Station in the Zoological Garden, Bronx Park, New York City.

This station is equipped with 26 water-closets, 19 urinals, 5 lavatories and one slop-sink.

The closets are all of the "Adrian" type with Boyle flush-valve, as the engineers considered this best suited to meet the existing requirements. These closets are attached direct to the cast-iron soil-pipe in the wall, placed to it and leaving the floor clear of all obstructions. The rim of these closets is formed in the shape of a seat, and the usual wood-seat is omitted.

The urinals are of the "Hinsdale" type with overlapping and extended porcelain partitions, integral drip-receptor, level with floor, and with all parts of the urinal, reached by water, integral without joints and fully glazed. The urinals also are flushed by means of the Boyle flush-valve, of similar construction to that used on the closets but of smaller size. A 2-in. Hinsdale outlet-fitting with china-strainer completes the urinal, making it a combination which, when installed, presents no unfinished surface or insanitary features. The extended partitions of the urinal give the users all the privacy desirable.

The lavatories are of porcelain supported on porcelain

legs and equipped with the "Hudson" self-closing and slow-closing time basin-cock.

All marble in connection with the closets is supported 12 in. free of floor. The floors are of vitreous tile and the walls of glazed tile. There is no woodwork in either the men's or the women's compartments in connection with the fixtures or the trimmings; even the attendant's cabinet is white enameled inside and outside, the result

Photograph by courtesy of the Federal-Huber Co., Chicago.
Battery of Urinals and a Lavatory in the Zoological Garden Station.

being that every day after the busy hours he can turn the water on and, by the aid of a hose, wash the rooms out thoroughly. It is hardly necessary to add that floor-drains have been provided at suitable locations to take care of this waste water. The entire arrangement has been found most satisfactory in operation and it is considered ideal in every respect.

THE INDIANAPOLIS PUBLIC-COMFORT STATION.

The Indianapolis authorities were confronted with a difficult problem, for at the point where it was decided to erect a public-comfort station an 8-ft. main trunk sewer was less than 10 ft. underground. As a result, the station differs from the usual construction in being partly below and partly above the street-level. It was found necessary to remove about a foot from the top of the sewer and support the floor of the station on I-beams transversely placed, sustained by footings at the ends. The roof is about 3½ ft. above ground, and is surrounded with a 9-in. curbing to prevent damage from collision with vehicles. Our illustration shows the entrance to the women's section. A similar entrance at the other end of the station leads to the men's division, and between the stairways at each end is an attendant's room, that on the women's side furnished with a couch and benches.

The walls are of brick, varying in thickness from 18 to 30 in., thoroughly water-proofed and lined inside with hollow brick and glazed white tile. The floors and roof are of concrete, the roof waterproofed with elastic paint.

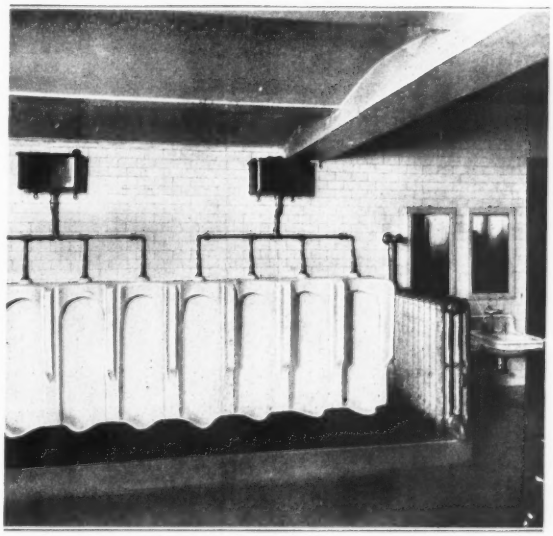
Ventilation is provided by means of a 20-in. tile pipe, through which the air is carried from the bottom of the stairs to side-wall ventilators in the wall furthest from the outlet, from which it is drawn by a motor-driven disc-fan in the top of the ventilating-shaft shown in the illustration. Each toilet-fixture is separately vented, and the closets for soiled linen have ventilators also. Heat is supplied from a central-heating station, the radiators occupying the least possible floor-space.

Like the station at Brookline, Mass., there is a central compartment in which all flush-tanks, hot-water tanks,

Photograph by courtesy of "Municipal Engineering," Indianapolis.
Exterior of the Indianapolis Public-Comfort Station.

water, soil and vent-pipes are run. The plumbing fixtures are of the best quality white enamel, nickeled brass and marble being used.

On the men's side there are 7 water-closets, 8 urinals, 2 lavatories and 4 pay-compartments. The latter are equipped with porcelain fixtures, including lavatory with hot and cold water, and a mirror. Towels, liquid soap



Photograph by courtesy of Jas. B. Clow & Sons, Chicago.
Lavatories and Urinals in the Indianapolis Station.

and brush and comb are supplied in each pay-compartment. The women's section has 7 water-closets, 4 lavatories and three pay-compartments with the same equipment as on the men's side. Each part of the station has a slop-sink.

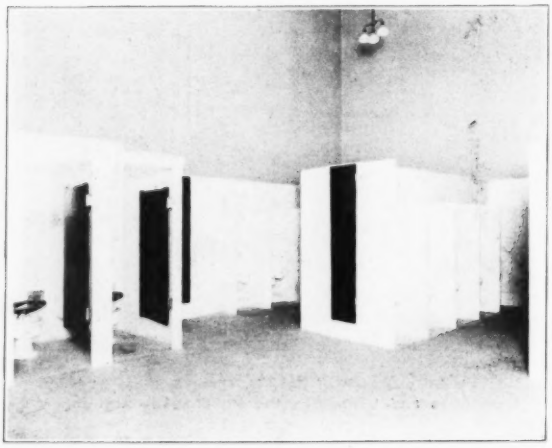
The station was erected at a cost of a little over $17,000. It is open to the public from 730 a. m. to 11:30 p. m., and is provided with an attendant for each section.

The Magnificent Public-Comfort Arrangements at the Chicago & Northwestern Passenger Terminal

The importance of providing adequate terminal facilities has been increasingly realized by all large railway systems during the past decade. The old-fashioned, unsightly structures which rivaled each other in filth, darkness and architectural monstrosity are fast disappearing, and in their place the public is provided with commercial palaces, equalling in size and magnificence the greatest structures of the ancients.

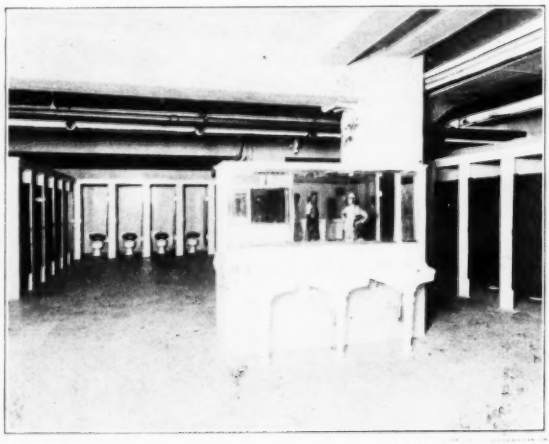
Photograph by courtesy of the L. Wolff Mfg. Co., Chicago.
Urinal and Lavatory Installations.

Foremost among these is the new passenger terminal-station of the Chicago & Northwestern Railway Co. on Canal, Clinton and Madison streets. It is a four-story structure of the early Italian renaissance architectural treatment. At the Madison street entrance, the visitor is confronted with a lofty Doric portico, supported on a colonnade of six granite columns, each 7 ft. in diameter and 61 ft. high. Splendid vestibules of various treatments give access to the ticket-offices, baggage-rooms, telegraph-offices, etc. From the center of the space devoted to these, the grand stairway leads to the main waiting-rooms on the next floor. Several



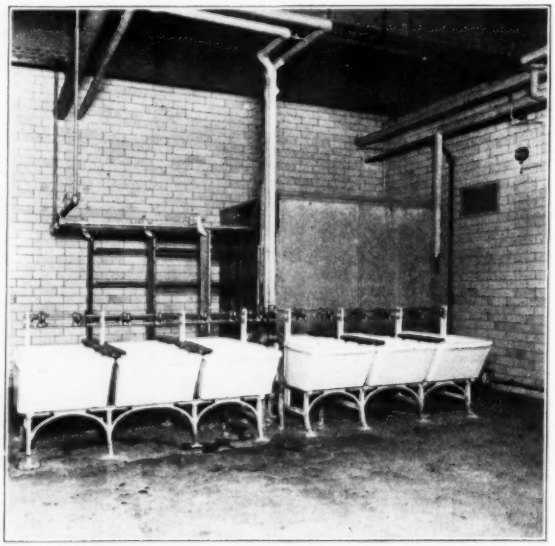
Photograph by courtesy of the L. Wolff Mfg. Co., Chicago.
Section of Men's Toilet-Room.

pages could be devoted to the description of the many departments of this wonderful building. We are concerned, however, at this time, only with the perfect equipments and installations provided for the public comfort of the passengers. In one particular feature—the installations for the comfort of immigrants—the Chicago & Northwestern Railway has surpassed any similar installation in the world. It must be considered that provision for adequate facilities in such a building required careful planning. The average daily passenger-atten-



Photograph by courtesy of the L. Wolff Mfg. Co., Chicago.
Longitudinal View in Basement Toilet-Room.

dance, incoming and outgoing, is 52,000 passengers, and 10,000 of these avail themselves of toilet-privileges in some form or another. The figures on this are more accurate than an ordinary estimate, because the company has installed a sanitary paper-towel system, and the use of this, and registration of the pay-compartments, assisted by the counting of the attendants, have shown these figures to be correct as an average attendance.



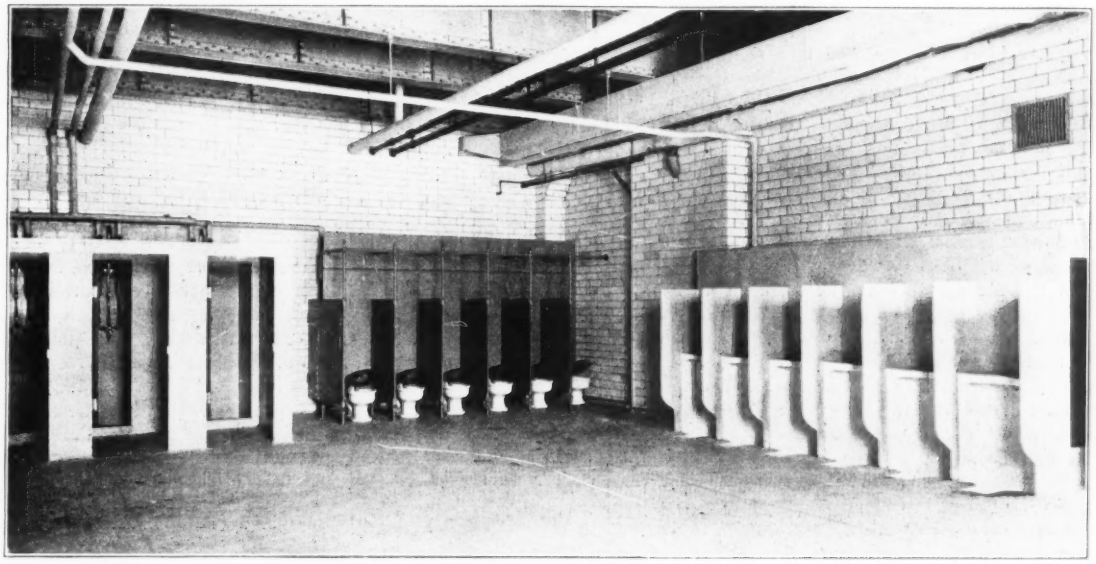
Photograph by courtesy of the L. Wolff Mfg. Co., Chicago.
Immigrants' Laundry and Drier.

There are four divisions set aside for public comfort, two for each sex. On the main floor is a men's toilet-room at the entrance to the building on Canal street, containing 26 toilets, 16 urinals and 16 lavatories. The floor is of terrazzo. On the second floor is another

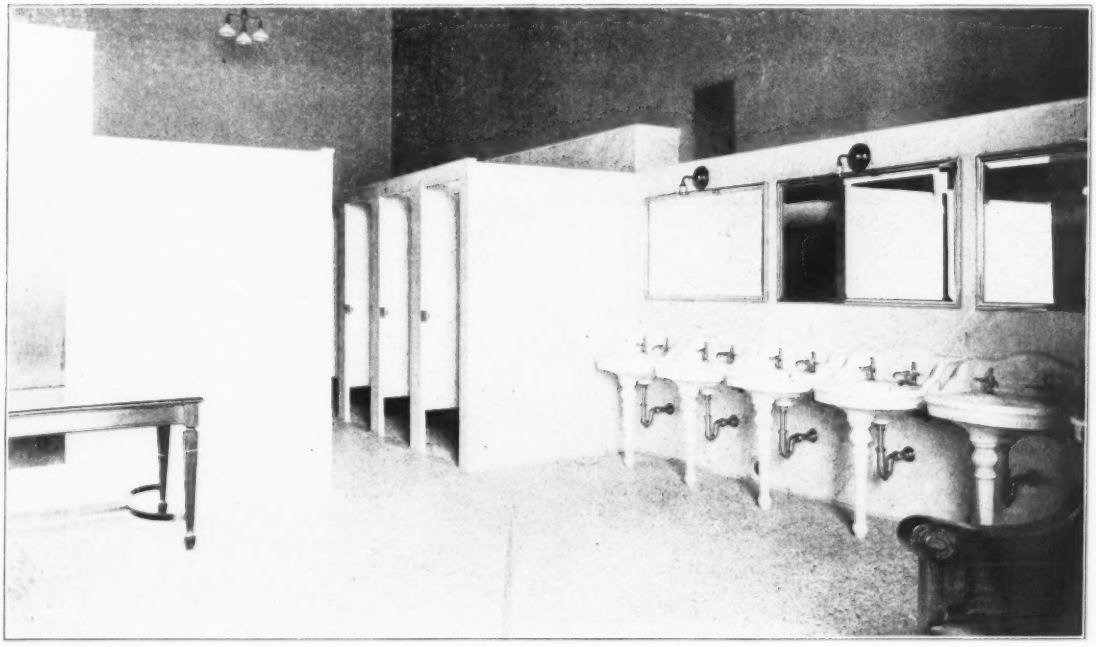
men's toilet-room, containing 24 toilets, 30 urinals and 8 lavatories. There is one pay-compartment in this division. The floor is of Tennessee marble.

The women's public-comfort installations are on the second and third floors, containing similar toilet lavatory-provision, the number of conveniences being one-half of that provided for the men, this being a proportion of usage which seems to prevail in public-comfort-station practice. The floors in the women's conveniences are also of marble. The walls in the men's and women's departments are of marble throughout, and ceilings of cement.

One of the most interesting sections is that devoted to the use of immigrants. These contain, as shown in the illustrations, water-closets, urinals, lavatories, laundry-tubs and clothes-drier for the women. The walls of these immigrants' rooms are covered with white terra-cotta tiling and the floors and ceiling are of cement. Each department of the immigrants' rooms is provided with a male and female attendant, respectively, capable of speaking several foreign languages and equipped with good tempers and an unlimited amount of patience. Their duty is to watch the condition of the immigrants in the depot, and if they should have to wait over seven



Photograph by courtesy of the L. Wolff Mfg. Co., Chicago.
Splendid Showing in Male Immigrants' Toilet-Room.



Photograph by courtesy of the L. Wolff Mfg. Co., Chicago.
Showing the Luxurious Public-Comfort Equipment in Ladies' Main Toilet-Room.

or eight hours for their next train, they are invited to take a bath, wash their clothes and revel in the luxuries which the immigrants' rooms afford. Most of them need careful instruction. Only recently one Polish immigrant was found bathing her three youngsters in three water-closets, and they were howling in protest as if they knew more than their mother. The drier is quite a large compartment and will dry the clothes, when washed, in from 20 to 25 minutes. The company in providing this convenience has shown a broad public spirit, for there is no law which compels such an installation. Many immigrants are receiving daily their first sanitary teaching through the privileges thus obtained.

All water-closets are individually vented. Vitreous-ware fixtures are used throughout. Automatic seats are used on all the free water-closets. The pay-toilets are individually operated. There is a pay-compartment also on the second floor in the women's division. For the sum of 10 cents, the use of the fixtures is allowed and each user is provided with towel, soap, etc.

The heating and ventilation of these different divisions is accomplished by a most elaborate system. Both direct and indirect radiation is used. Provision is made so that when the weather is chilly and temperature changeable, requiring a constant heating supply necessary, the direct steam-radiation is kept on and temperature varied by the introduction of cool or warm fresh washed air. Thus, an even temperature is maintained in every room. The controlling of temperature is accomplished by thermostats which automatically deliver cool or warm fresh air as required, this eliminating possible carelessness of the attendants.

For the various needs of the terminal-station, an abundant water supply is required. A special pumping station has been installed which furnishes an average of 35,000 gal. of water daily.

The plans of the new terminal-station were commenced in 1905 and it was opened for public service on June 4, 1911. The total acreage of right-of-way is 37 acres and 20 acres are covered by buildings.

SAN FRANCISCO INAUGURATES EXTENSIVE PUBLIC-COMFORT-STATION SYSTEM.

Although San Francisco, Cal., has no public-comfort stations as yet, the municipal authorities fully realize the necessity of immediate action, especially in view of the many visitors anticipated during the Panama-Pacific Exposition. On September 19th the Board of Health adopted a resolution addressed to the Board of Supervisors of the city and county, calling for legislation which will provide both for public-comfort stations and for the abolition of the common drinking-cup, with the installation of sanitary drinking-fountains.

After reciting the need of public-comfort stations in various localities throughout the city, and the sense of responsibility which the Board of Health feels, the resolution dwells upon the fact that public-comfort stations have been in successful operation for many years in Europe and are being more generally adopted in the United States, proving to be practically self-supporting under proper management; that the erection of sanitary drinking-fountains throughout the city is "an almost crying necessity"; and that in view of the large influx of visitors expected during the Panama-Pacific Exposition, it is the duty of the authorities "to demonstrate to the world at large that San Francisco is in the vanguard of the march toward public improvement and the betterment of civic conditions."

After careful examination of present conditions, the Health Officer and his assistants have made a list of the localities where they believe comfort-stations should be installed as soon as possible, and have also recommended that steps be taken at once to substitute sanitary drinking-fountains where the need seems to be greatest. We give the substance of their detailed report:

Public-comfort stations should be constructed at 12 important points, namely: At or near the intersection of Battery, First and Market streets, a center where teamsters stop at all hours to water their horses. A sanitary drinking-fountain is also needed here. At or near the intersection of Third, Market and Kearny streets; the intersection of Turk, Market and Mason streets; in Marshall Square, opposite the temporary City Hall, now nearing completion; near the intersection of Van Ness avenue, Market and Oak streets; at 22d and Mission streets; at 29th and Mission streets; this last-named point is the inlet and outlet to the city from the long drive over the Mission Road to the cemeteries, etc., in the outlying districts, and therefore is especially important. Underground convenience stations are needed in Mission Park, at 18th and Dolores streets; Duboce Park (where at present there are no conveniences); Jefferson Square, where the facilitis are not adequate. Another station is needed in Hamilton Square, as the present station is at the extreme western end of the park, in the portion now to be devoted to playground purposes, and sanitary drinking-fountains should be installed without delay, as this park is practically without any. The abolition of the present drinking-fountain arrangements and installation of some sanitary device is urgently needed at Golden Gate Park; the Rest House, Stowe Lake; four places in the Children's Playgrounds; three points on the tennis courts. The recommendations are specially earnest on the needs of Ocean Beach and Great Highway, where, it is stated, "the absence of convenience-stations and drinking-fountains has been the subejct of much adverse comment," as there is only one such station in the whole length of the highway.

In addition to the installation of bubble-fountains in connection with the comfort-stations, the supervisors are urged to abolish the common cups now in use at Kearny and Market streets; Mason and Market; Mission Park; Duboce Park; Jefferson Square, and Portsmouth Square, replacing them by up-to-date sanitary installations. All these points are merely the nucleus of a general plan, to which additions will be made as needed.

The recommendations of the Board of Health will have the approval of all who have given any attention to the matter, and the civic pride of San Francisco people will surely demand that the municipal authorities take steps at once to alter present antiquated conditions and add San Francisco's name to the roll of cities making suitable provisions for the health and comfort of citizens and visitors.

KANSAS CITY, MO., TO HAVE A PUBLIC-COMFORT STATION.

Kansas City, Mo., is soon to have its first public-comfort station. At a meeting of the mayor's cabinet on October 16th, it was decided to construct an underground station on Ninth street, midway between Main and Walnut streets. It is to cost approximately $15,000. As is usual in public-comfort plans, the entrances for men and women will be at opposite ends of the station.

Public Sanitary Station in Brookline, Mass.

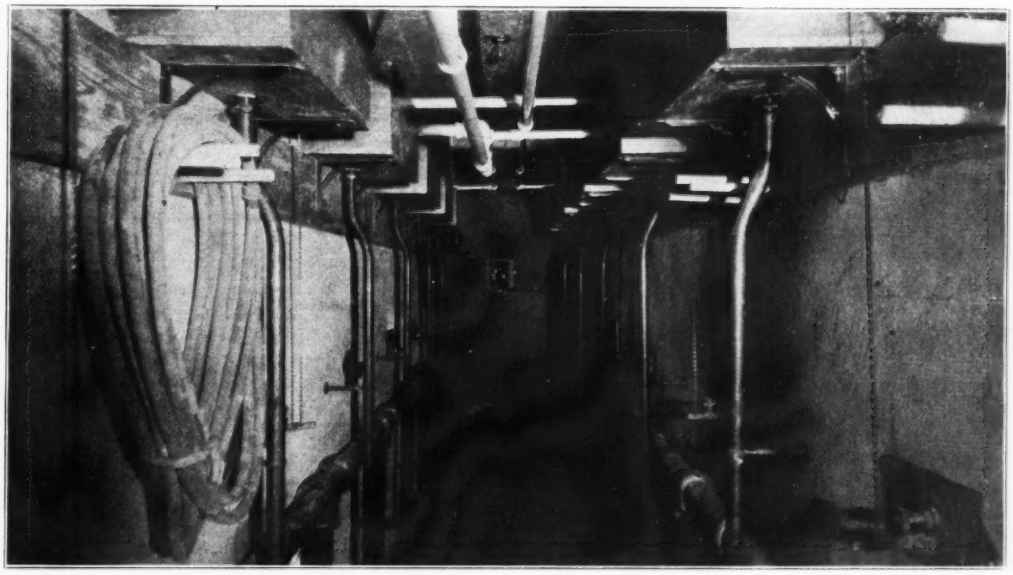
Brookline, Mass., erected its first sanitary station in 1909 in Village Square, across which street-cars to and from Boston pass every minute. Brookline is a young city of 27,000 inhabitants. The station is constructed of portland cement concrete. The ground over and adjoining it has been planted with shrubbery. On the men's side there are installed 6 water closets, 6 urinals, 2 lavatories, and a bubble drinking-fountain, in a room 15 x 18½ ft. The women's side is of the same size ,and contains 6 water closets, 2 lavatories, a bubble drinking-fountain and a small retiring-room. The entrances are covered vestibules, right-angle turns in the staircase providing maximum privacy.

Lighting is secured by six light-shafts with luxiter prisms by day, and during dull weather and at night electric lights are available. The sides and roof of the station are thoroughly water-proofed.

Fire-Station at Brookline, Mass., in Front of Which an Up-to-Date Underground Public-Comfort Station is Located.

The water-closet partitions, urinal stalls and wainscoting are of gray Tennessee marble and the floors of white tile, 3 x 3 x 2½ in.

An interesting feature of the construction is the pipe-chamber and passageway, in which are located the main soil-pipe with its branches and cleanouts, the trap ventilation, water closet tanks and connections, ventilating fans and conduits, slop-sinks and space for storage of supplies. The flushing of the water closets is accomplished

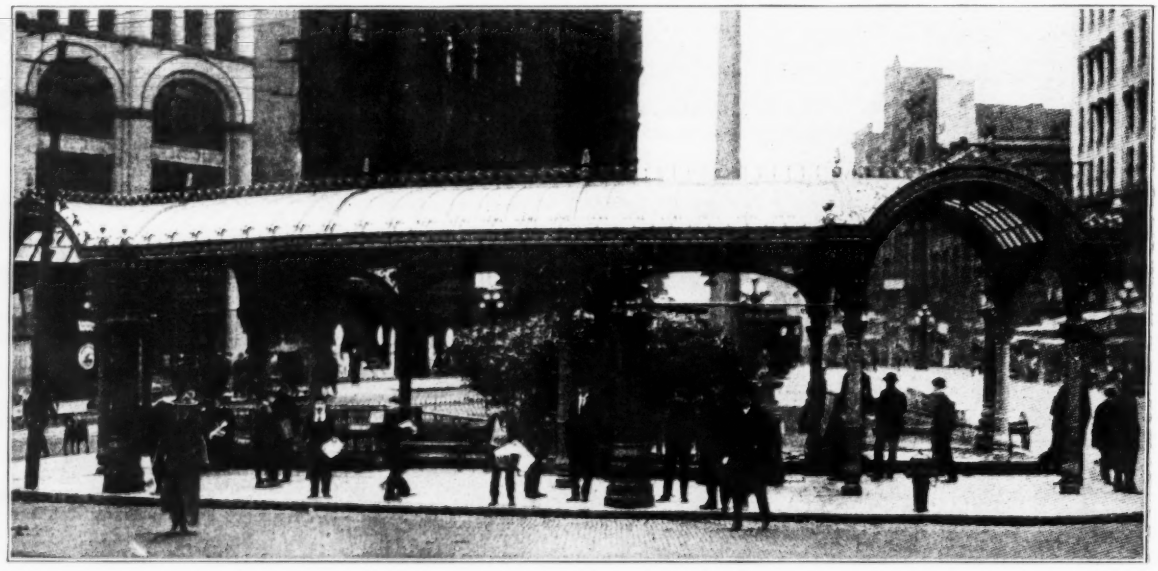


Pipe-Chamber in the Public-Comfort Station at Brookline, Mass., Showing Piping for Water-Supply.

by a push-button. The urinals are all of the siphon-jet pattern, having a large local vent connecting with a ventilation pipe leading to the ventilating fans. The building is heated from the hot-water system of the fire-station plant which is only a few feet away, as shown in our illustration. The heating plant has been designed on the scale of one sq. ft. of radiation to 40 cu. ft. of space. Each light-shaft is provided with a 9-ft. radiator, which aids in heating and keeping the snow melted in winter. Brookline considers its station a splendid investment.

The Splendid Public-Comfort Station of Seattle

Seattle people are proud people, and they have some reason. It is recorded that an investigating committee of Seattle, inspecting different cities of the United States, in describing their tour upon their return announced that Chicago was the Seattle of Illinois. One of the municipal features of which Seattle citizens expressed distinct and justifiable civic pride is the public-comfort station at First Avenue and Yesler Way. Its location has been wisely chosen, being one of the busiest corners of the city's commercial activities. Three car-lines terminate within a block of it, and Puget Sound and coastwise steamers contribute their share of passenger traffic.



Ornamental Iron and Glass Canopy Over the Pioneer Square Public-Comfort Station at Seattle, Wash.

The comfort-station forms the base of the triangle of Pioneer Place, occupying a ground space of 60 x 35 ft., with 35 ft. on Yesler Way.

The illustration will show the station's ornate structure, consisting of a canopy of ornamental iron, supported by columns of Corinthian design. There are four ventilating columns, surmounted by electric fixtures of four lights each. The roof proper is composed of wire-glass.

As is customary in public-comfort station structure, the entrances to the women's and men's sections are at opposite ends of the station. The stairs are of terrazzo and the stairway walls of red tile. The floor of the station itself is of terrazzo upon a solid base of concrete. The walls are of white tile up to a height of six feet, above which they are finished in an ivory-tinted cement.

In the men's section at the foot of the stairs are two entrances, one leading to the caretaker's room and a bootblack's department, and the other to the men's station. In the free room, which is 12 x 40 ft., are 10 toilets, 5 lavatories, 4 sets of urinals, and one sink. The pay room is 12 x 30 ft., and contains 6 toilets, 5 lavatories, and 4 sets of urinals. In the women's room there are 9 toilets, 2 of them being pay-compartments, 6 lavatories and one sink.

The heating and ventilation of the station present several unique features. A 2-ft. air-space surrounds the triangular station, whose wall construction consists of a 12-in. concrete wall and a 6-in. false wall of reinforced concrete. On each of the three sides of the 12-in. wall is mounted a 6-in. coil pipe supplied with steam from a central heating station. The air-space is connected with the main room by bronze gratings 8 in. above the floor level and 6 ft. apart. Proper heat in the stations is secured in this manner by indirect radiation, the anterooms being additionally supplied by direct radiation.

Ventilation is secured by pipes connecting the seats with the vent-posts, individual motor-driven fans being located at the foot of the four vent-posts. These draw out the foul air and discharge it 11 ft. above the pavement.

The station is excellently lighted during the day by a sidewalk light, and at night by electricity, through ceiling globes.

The men's room has a marble shine-stand properly equipped, and a cigar-stand. In the women's room there is a shine-stand and a showcase with toilet supplies. The

average Sunday attendance is near to the 10,000 mark. The station is kept in perfect condition by a caretaker and his wife, assisted by three employees, the caretaker having been granted a concession based upon authorized charges for the conveniences offered.

The plumbing is of the finest, the station containing 61 fixtures.

This station was opened on Sept. 23, 1909, being completed at a cost of $24,505.85. The growth of Seattle's commerce demands a thorough system of these stations.

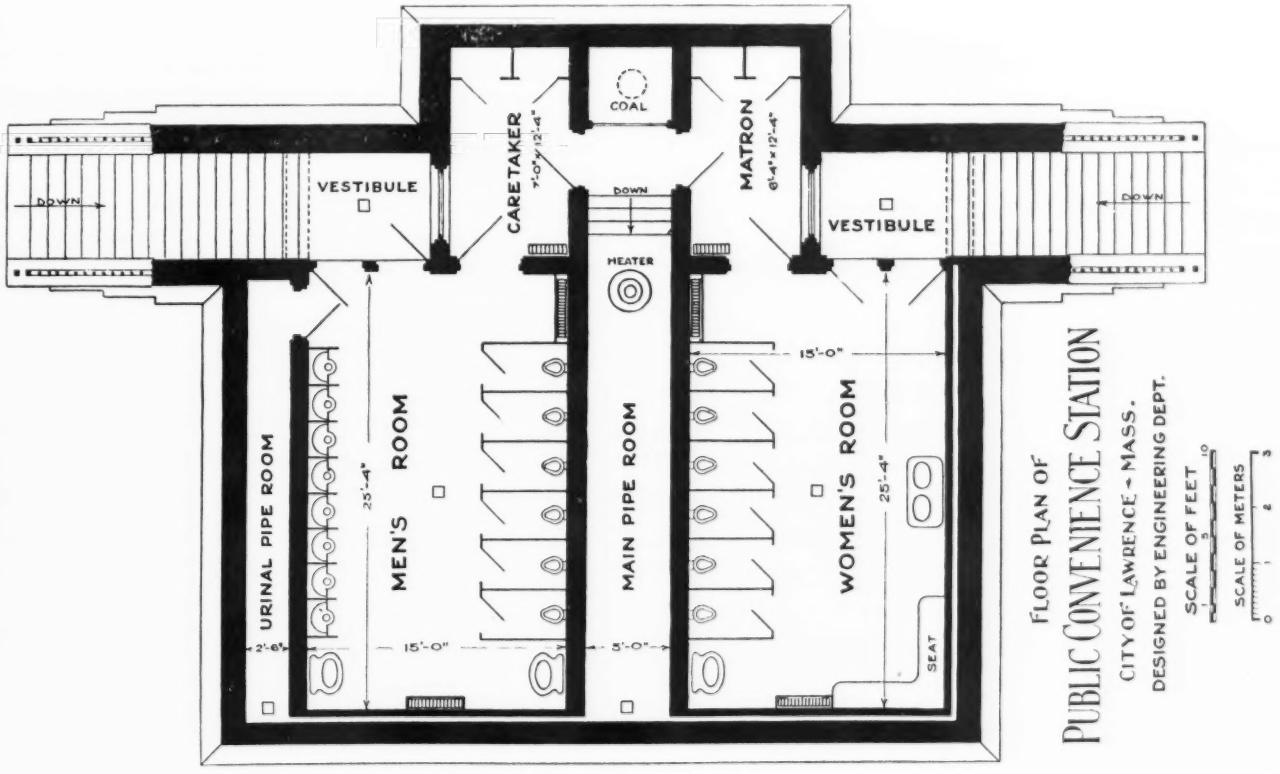
Underground Station at Lawrence, Mass.

After experimenting for a number of years with public urinals, catering to male needs only, and badly cared for, sufficient public spirit was aroused in 1907 to secure an appropriation of $12,000 for a public-comfort station worthy of the name and designed to provide adequate facilities for both sexes. The station was opened to the public on Dec. 30, 1907. It is located on the Lawrence Common. Its actual cost was $14,000. Its annual cost of maintenance approximates $5,000. Its estimated yearly attendance is 50,000 persons. Roscoe Doble, Clerk of the Lawrence Board of Health, writing to "Domestic Engineering" on Oct. 24th, says:

"No building of any description was ever erected in Lawrence, which has contributed so much to the convenience and comfort of the people and of visitors as this comfort-station, not excepting school-houses and churches."

Proper attendants are provided and every closet is examined after use, the station being at the present time in as perfect a condition as when first opened. The men attendants are paid $14.00 weekly and the women receive $10.50. Their duties are to keep their respective compartment in a perfectly spick and span condition, polishing the brass-work, etc. The men also attend to the heating apparatus, remove ashes and clear the snow away in winter.

Underground construction was chosen to avoid disfiguring the Common and the expense of exterior architectural ornamentation. Above ground, there are only the smoke-stack, the copper-covered ventilator and stone parapets and iron fencing inclosing the entrances.



The outside underground walls are of concrete, waterproofed. The interior walls are of brick, all exposed surfaces being of white enameled brick. The lower three courses of brick are excepted, being of chocolate color, so as not to show dirt, dust, etc. The roof is a waterproofed slab of reinforced concrete.

The station contains main toilet-rooms, 15x25 ft., each containing 6 water-closets. The women's department has 3 lavatories and a long seat. Two lavatories and 8 urinals are on the men's side. There are also two attendants' rooms, 7x12 ft., two pipe-rooms and a coal-bin of 6-ton capacity.

The station is lighted by day by skylights and by night by electric lights in holophane globes. The outside signs are glass transparencies, electrically illuminated at night.

Ventilation is secured entirely through water-closet seat-vents, extending through the wall to a galvanized duct

connected with a cylinder surrounding the smoke-stack. The cylinder reaches the air near the top of the copper ventilator.

The urinals are of solid porcelain, extending clear to the floor; the partitions are of Italian marble; the floors are of terrazzo; the ceiling is concrete, painted white.

The actual construction cost was $13,897.83. In maintenance, paper costs about $84.00 and liquid soap, $25.00 per year. Towels can be obtained for a cent, the attendants receiving the money and keeping up the supply of towels. The men's division is open from 7:30 a. m. to 11:30 p. m. and the women's from 8 to 11.

A Gurney heater heats the station and water in winter and a small jacket-heater heats water and maintains ventilation in summer. The yearly consumption of coal is about eight tons. The radiators are incased in white marble, with white porcelain-enameled registers.

PROVIDENCE, R. I., TO HAVE A SERIES OF PUBLIC-COMFORT STATIONS.

A resolution making an appropriation of $15,500 for the construction of an underground comfort station at the junction of Mathewson and Weybosset streets, Providence, R. I., was presented in the Board of Aldermen on Sept. 21 by Alderman John H. Higgins, chairman of the public-comfort station committee. In connection with the resolution the committee presented its report.

According to the report the committee has completed the plans for the Mathewson street structure, but, owing to certain changes in the details of the proposed Market square station, the resolution does not include this latter station. The report follows:

"In accord with the instructions contained in resolution No. 373, approved Nov. 9, 1910, your committee obtained by competition sketch plans for two public-comfort stations, one to be located over the river, north of Market square, and the other to be located at the junction of Mathewson and Weybosset streets. Certain details in the matter of negotiations for the enlargement of the scope of the Market square structure so as to include a provision for a shelter are yet to be completed, so that a delay is necessary in relation to that comfort station.

"Plans for the comfort station at Mathewson and Weybosset streets, however, have been approved not only by your committee, but by the Commissioner of Public Works, and the Inspector of Plumbing, and provide for an underground structure with ample accommodation for men and women. The super-structure is to be about 10 by 24 ft. at an average height of nine feet above ground, and will be of hollow tile and vitreous grey brick. In this connection it may be stated that provision has been made for the retention of the facilities for a drinking fountain for horses and dogs, this feature to blend well with the attractive architectural design of the station. It is estimated that this structure will cost about $15,000.

"As was stated in the last report of this committee, there appears to be such a general public opinion in favor of the immediate establishment of comfort stations in various parts of the city, that it is not necessary at this time to make any argument in favor of the same. Your committee therefore urges that no time be lost in providing this much-needed public convenience and for that reason submits herewith and recommends for passage a resolution for obtaining, as needed, the $100,000 which the city is authorized to expend for comfort stations, and specifically designates that not exceeding $15,500 shall be expended for the said station at Mathewson and Weybosset streets."

WANT PUBLIC-COMFORT STATION AT LONG BEACH, CAL.

Long Beach, Cal., is endeavoring to have the Salt Lake and Pacific Electric railways install drinking-fountains and comfort-stations in all their waiting-rooms.

TRENTON DEMANDING PUBLIC CONVENIENCES.

Trenton, N. J., has no public-comfort station as yet but the sanitarians of that prosperous city are working steadily with a view of securing one in the near future.

PORTLAND, ORE., WILL HAVE PUBLIC-COMFORT STATIONS SOON.

Portland, Ore., contemplates the erection of a system of public-comfort stations in the near future. Ralph C. Clyde, a member of the City Council, is at the head of this progressive sanitary movement. City Engineer Hurlburt has been requested to investigate the possibilities of suitable sites and to report seven favored locations and give estimates of installation-costs. Mr. Clyde says: "Portland is called a convention city, but while it is the most beautiful city perhaps in the whole country, it is sadly lacking when it comes to taking care of its guests. There are but four public lavatories in the entire city. This situation should not be allowed to prevail any longer.

"I am in favor of a system of underground stations on an elaborate scale. Some cities build them above ground and still others above and below, but in Portland we need all our park space and, I think, they should be placed beneath the surface. We should have these stations on both sides of the river and they should be situated so as to overcome a condition that at present is serious."

THE ST. LOUIS PUBLIC-COMFORT STATION.

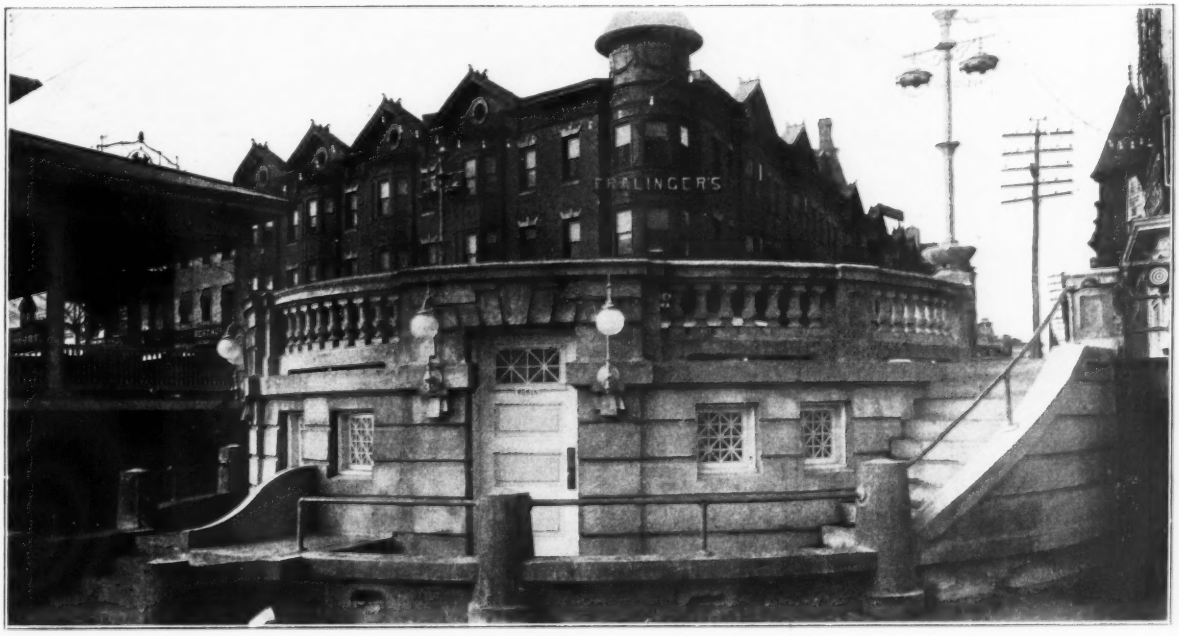
The first public-comfort station in the down-town district of St. Louis, Mo., was opened to the public in January, 1910. It is very completely equipped, having pay-compartments and free compartments, and in the women's section there is an emergency-room with a sanitary couch. An interesting thing concerning this station is that its cost has been defrayed by some private citizen of St. Louis, whose name has not been made known to the public. At the entrances to each department are bubble drinking-fountains. The station is located in the basement of the court-house. It is expected that the ready appreciation shown by St. Louis citizens will result in the establishment of similar conveniences throughout that progressive city.

THE CINCINNATI PUBLIC-COMFORT STATION.

Cincinnati, O., has an excellent underground public-comfort station, located in Fountain Square. It is rectangular in form, the two departments being approached at opposite corners. The men's section has an equipment of 10 closets, 4 lavatories and 8 urinals. The women's department has 7 closets and 6 lavatories. Drinking-fountains are also provided. The closets in the two departments are placed back to back and in the space between them is the gallery containing supply and venting pipes, and flushing-tanks which are easily accessible. The wastes are in the floor in front of the fixtures, and are also accessible. The ventilation of the station is secured by a very compact venting system operated by a fan.

Views of Public-Comfort Stations at Cincinnati, Ohio and at Atlantic City, N. J.

Men's Compartment in Cincinnati's Public-Comfort Station.

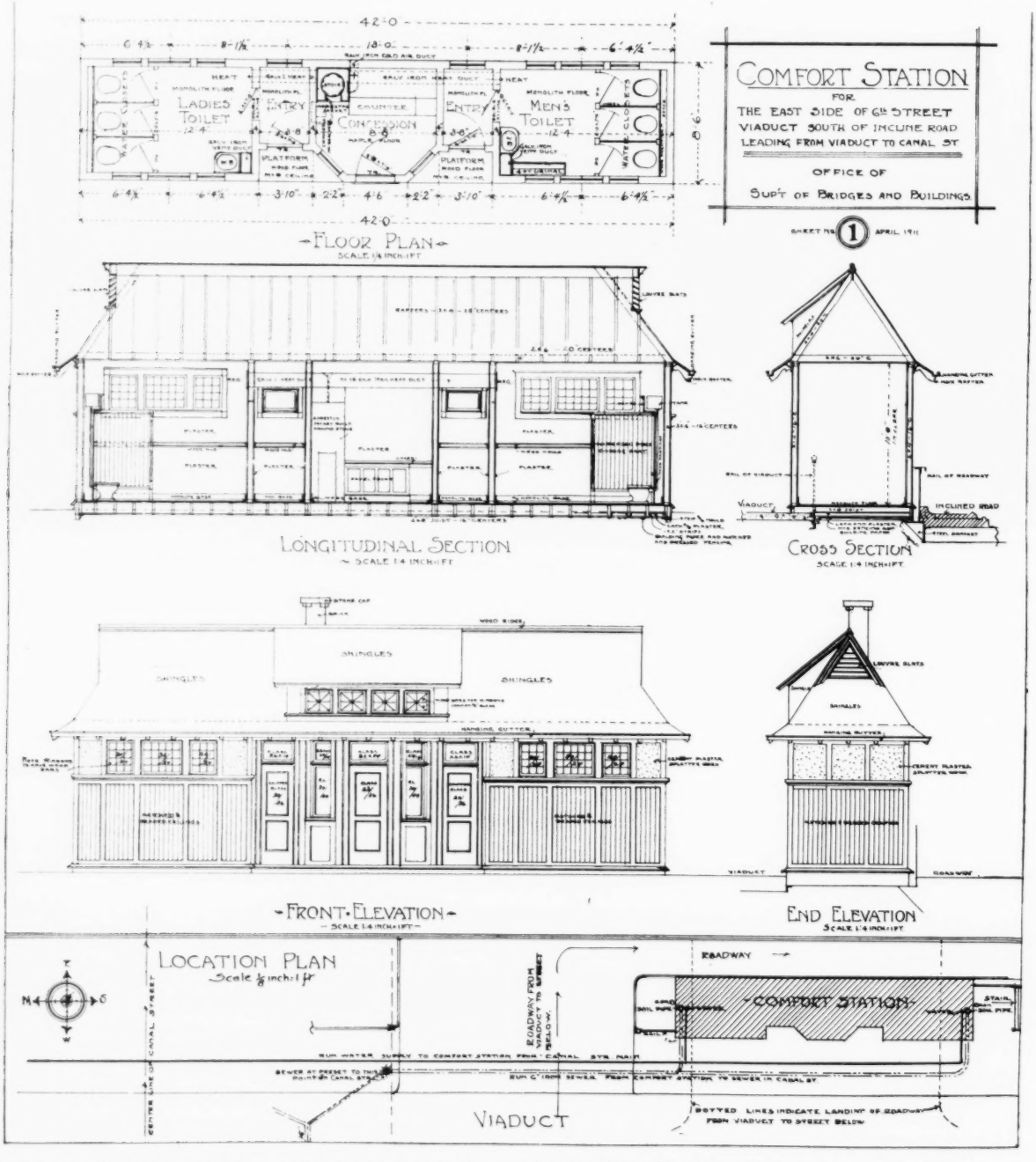


The Attractive Entrance to the Elaborate Public-Comfort Station at Atlantic City, N. J.

First Ave., Viaduct Comfort-Station, Milwaukee, Wis.

The plans herewith presented show the accomplishment of sanitarians in securing a municipal public-comfort station in Milwaukee, Wis. It is hoped that this first station will be the forerunner of many similar institutions in the Cream City.

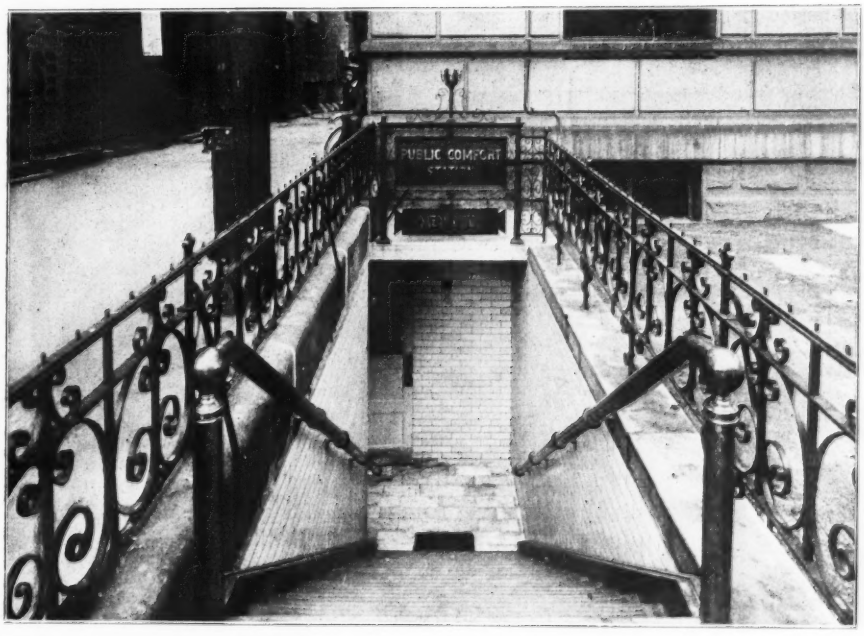
In contrast to many of the public-comfort stations which are located underground, the station on the First-Avenue Viaduct, Milwaukee, is 30 ft. up in the air. This viaduct is a link between the north and south sides of the city, and is about a mile in length, crossing many railroad tracks and two rivers. The station is located about midway of the structure, and has no connection with any other building. The water and sewer pipes are run to it from S. Canal street, immediately below, both water and soil-pipes being well double-boxed to prevent damage from freezing. As there are many factories in the vicinity, there is much travel across this viaduct, and the location of a comfort-station at this point will be greatly appreciated. The caretaker will receive a small monthly salary and has also the privilege of selling cigars, newspapers, and such small articles as he may find in demand, for which space is provided. A nominal charge of one cent each will be made for the use of soap and towel. The station was opened to the public in August.



Imposing Approaches of Brooklyn and Denver Stations

Photograph by courtesy of J. L. Mott Iron Works, New York City.

Public-Comfort Station at Broadway, Myrtle Avenue and Lorimer Street, Brooklyn, N. Y.



Photograph by courtesy of Jas. B. Clow & Sons, Chicago.

Entrance to Public-Comfort Station in Denver, Colo.

THE PUBLIC-COMFORT STATION SYMBOL.

The symbol herewith illustrated was definitely adopted as the most suitable for public-comfort station work by the American Society of Inspectors of Plumbing and Sanitary Engineers at its convention in Milwaukee in 1911. The outer

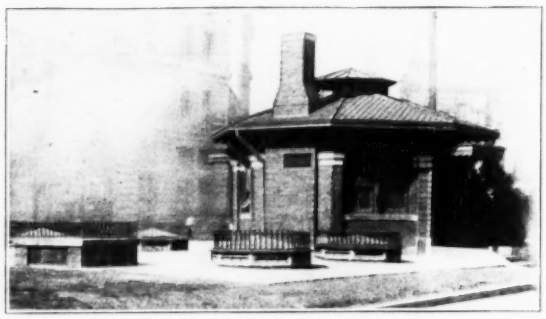
Public-Comfort Station Symbol, Endorsed by A. S. I. P. & S. E.

circle is green and the inner cross red, bearing the letter M for men and W for women. It is hoped that we may soon have the pleasure of presenting illustrations of the public-comfort stations which have adopted this symbol.

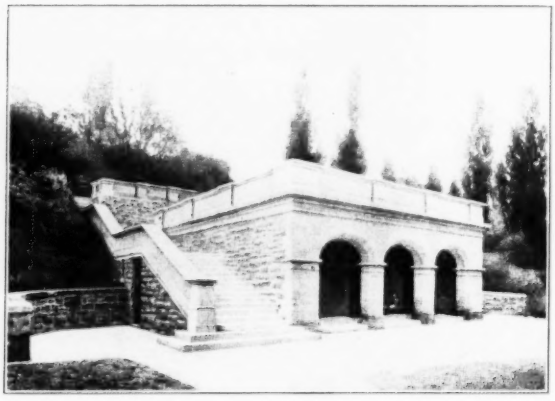
The first time it was put into use was in June, 1910, at Pasadena, Cal. A. C. Shaver, the Plumbing Inspector of Pasadena, conducted a successful public-comfort station crusade, resulting in the installation of small public-comfort stations in 30 Pasadena stores. The symbol was pasted on the store-windows containing the installation. The advantages of this co-operative movement have been much appreciated by Pasadena inhabitants.

Public-Comfort Station, Monument Square, Cleveland, O.

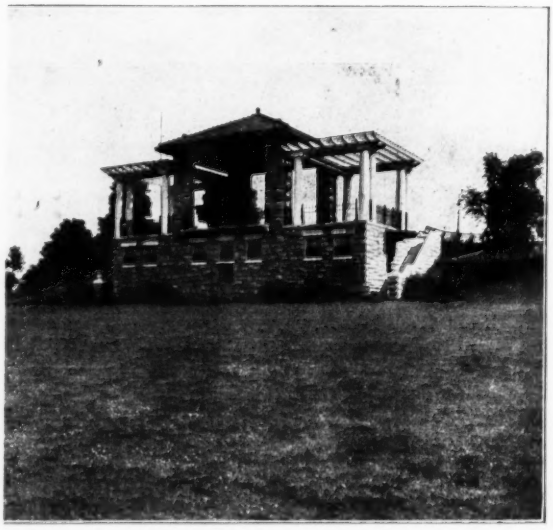
THREE INTERESTING EXTERIOR TREATMENTS.



Photograph by courtesy of Jas. B. Clow & Sons, Chicago.
Public-Comfort Station in Detroit, Mich.



Photograph by courtesy of J. L. Mott Iron Works, New York City.
Public-Comfort Station in Morningside Park, New York City.

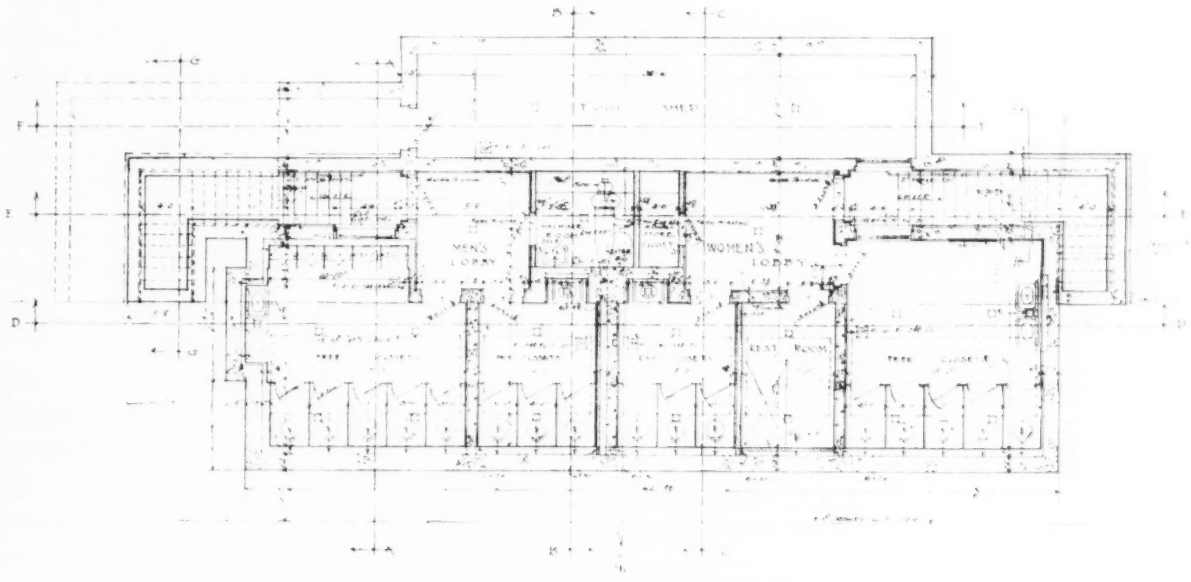


Photograph by courtesy of Jas. B. Clow & Sons, Chicago.
Public-Comfort Station, Observation Park, Kansas City, Mo.

The public-comfort station in Monument Square, Cleveland, O. was constructed at a cost of $9,200, its annual maintenance-cost being $5,000. All its conveniences are free. The yearly attendance is estimated at 1,750,000 men and 500,000 women, the figures being approximate.

THE LOS ANGELES PUBLIC-COMFORT STATION.

The public-comfort station at Los Angeles, Cal., is located in Central Park. It was constructed at a cost of $10,800. The floors are of tile and the walls of marble. Special attention has been paid to ventilation, which is secured through the operation of a full-housed, top-



Floor Plan of Public-Comfort Station at Los Angeles, Cal.

vertical-discharge Sirocco fan, direct-connected to a 1-h. p., 3-phase, 60-cycle, 110-volt alternating-current motor, built to run 900 r. p. m. and to deliver 2,300 cu. ft. of air per minute under actual operating conditions.

The vents commence at the urinals with 3-in. pipes and extend along the vent-space back of the fixtures, being increased at the closets to 4 in. in diameter. The vents are then continued to the division between the men's and women's toilet-rooms, where they are increased to 6 in. The venting system is then carried through the pipe-space and on to the roof.

The Los Angeles station is oblong in form, of concrete construction, and is interiorly finished in marble.

On the women's side there are 5 free water-closets, 3 pay-closets and 3 lavatories. There is also a rest-room, access to which is gained immediately from the women's lobby.

On the men's side there is the same equipment of water-closets, pay and free, and lavatories, and 5 urinals, the urinal section being nearest to the men's lobby. In the longitudinal center of the station, between the men's and women's lobbies, is a machine-room and a store-closet, and adjoining these a tool-shed.

The maintenance-cost of the station is about $300 per month, of which $240 is for the salaries of four attendants, the remaining sum being for supplies, etc. There are 6 pay-toilets and 10 free-toilets. The pay-toilets are not self-supporting, only paying for the necessary supplies.

We are indebted for this information to L. M. Powers, M. D., Health Commissioner of Los Angeles.

Denver, Colo., has a good underground station for men only, costing $7,000.

WATERLOO, IA., WANTS REST-ROOMS.

Mayor John R. Rector, of Waterloo, Ia., considers that one of the most imperative needs of Waterloo at the present time is accommodations for visitors from the surrounding country. He is anxious to have two or three comfort-stations, to be located on each side of the river where most needed. He favors not merely comfort-stations, in the strict sense of the term, but resting-places where ladies coming into the city for shopping, etc., as well as those residing in Waterloo, may find conveniences and opportunity to rest. These rooms would of course be supplied with comfort-station facilities, with attendant, and a small fee charged for extra service.

THE AKRON, O., PUBLIC COMFORT-STATION QUESTION.

To judge by the conflicting reports which have reached "Domestic Engineering," we presume that the inhabitants of Akron are not sure whether they possess a public-comfort station or not. Just as soon as the difficulties about the site seemed all settled, they bobbed up afresh in new guise. According to the latest we have heard, proceedings have been stopped by an injunction forbidding the director of public service to advertise for bids. We understood that the contracts had already been awarded. Only one thing can be said with certainty, and that is that the Akron people want a public-station, are determined to have a public-comfort station, and mean to build a well-equipped up-to-date public-comfort station to which they can point with pride when they show visitors how progressive they are. It was the intention to have an underground station costing approximately $10,000 constructed at the corner of Main and Market streets, but opposition on the part of some property-owners has interfered seriously with the plans of the municipal authorities. We suggest that if they can find no other solution of their problems, the citizens of Akron show themselves truly up-to-date by arranging for an aerial station.

PERSONAL MENTION.

Herman S. Stroebel has succeeded Chas. A. Phillips as manager of the Pacific Coast department of the Louis Lipp Co. in San Francisco, Cal. Mr. Stroebel also has the agency for the Monarch Brass Co.

Frank J. Laird, Syracuse, N. Y., has resigned from his position as special representative for the Pittsburg Water Heater Co., Pittsburgh, Pa., to accept the position as Eastern sales-manager in the sales department of the Hoffman Heater Co., at Lorain, O. Mr. Laird will assume his new duties on November 1st.

William F. Spear has been appointed general sales-agent for the Beler Water Heater Co., Pittsburgh, for New England, with offices and display rooms in the new Lawrence building, corner Tremont and West streets, the shopping center of Boston, and Joseph Bracey has been appointed assistant sales-manager. Both gentlemen formerly represented the Ruud Mfg. Co., in the same territory.

STANDARD MFG. CO.'S FALL BUSINESS MEETING.

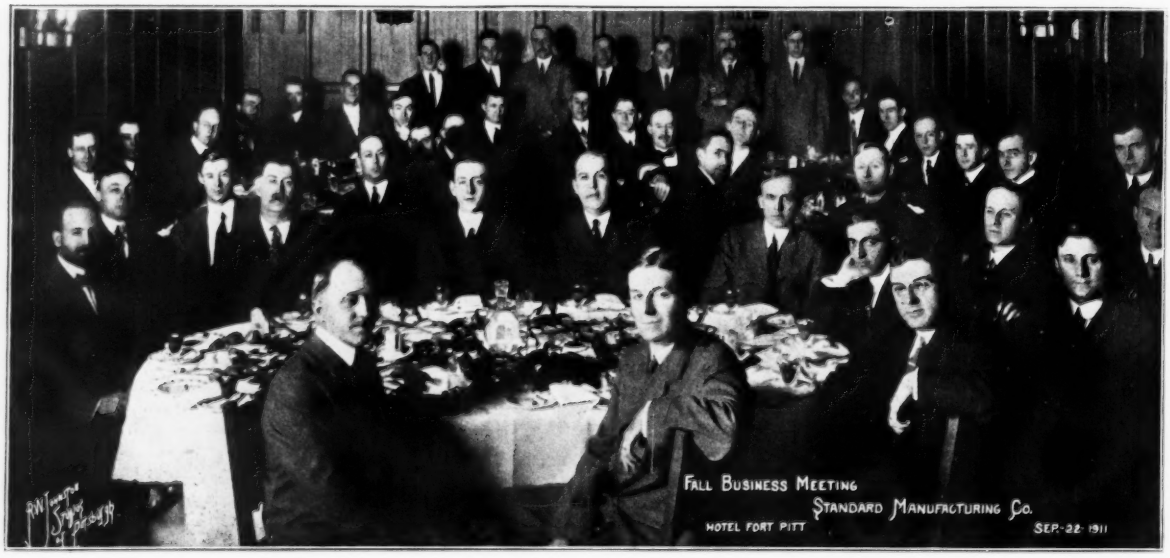
The Standard Mfg. Co., of Pittsburgh, Pa., held its fall business meeting at the Fort Pitt Hotel in that city on September 22nd. All the plumbing, heating and mill-supply salesmen of the company were in attendance and General Manager Geo. W. Ryan presided at the meeting. Messrs. Johnson and McIntire of the United States Radiator Corporation delivered interesting lectures on the subject of heating and William Barlow, of the Boston Woven Hose & Rubber Co., gave a helpful talk on Hose and Packing. The meeting ended in a banquet in the evening, at which the accompanying photograph was taken. The Standard Mfg. Co. plans to hold its next educational meeting in January, 1912.

JOBBERS AND MANUFACTURERS OF PLUMBING SUPPLIES HOLD TWO IMPORTANT MEETINGS IN CHICAGO.

The Manufacturers' and Dealers' Protective Association, consisting of manufacturers and dealers in plumbers' woodwork, held its regular quarterly meeting at Hotel Sherman, Chicago, on Tuesday, October 24th, and the Central Supply Association held its annual meeting at the same hotel on Wednesday, October 25th. Both meetings were well attended and successful in every respect. Fuller reports of these trade-gatherings will be published in next week's issue.

PROF. JOHN R. ALLEN MEETS MANY OBSTACLES IN HIS WORK IN TURKEY.

John R. Allen, author of "Notes on Heating and Ventilation" and professor of mechanical engineering in the University of Michigan, who left last July on a year's leave of absence, which he is spending at Roberts College, near Constantinople, for the purpose of establishing an engineering department in that institution, is having more than a modicum of bad luck and obstacles to fight against, according to reports which have just reached this country. Prof. Allen was to take with him a teaching force, and it was at this point the first streak of hard luck commenced. One of the force engaged died, and another backed out. Then one after another of the firms which were to furnish machinery for the new school broke their contracts in one way or another. He took with him his family, consisting of his wife, daughter and mother-in-law. The day they arrived on the campus of Roberts College, where all the professors live, the wife of one of those living next to them was taken sick



Standard Mfg. Co's. Plumbing, Heating and Mill-Supply Salesmen at Their Recent Annual Fall Banquet in Pittsburg, Pa.

with cholera and died. Prof. Allen found that nothing he had started while there the summer before had turned out as he had arranged—either the men had not understood his orders, or else were not inclined to pay attention to him. Even the location of the engineering department, which he had selected with infinite care and with a view to what demands the future might bring forth, had been changed. Now Turkey is in the midst of war with Italy. Little Helen, the daughter, is so homesick she is ill, and the mother-in-law has a premonition she will never live to get back to Ann Arbor. So it is more than likely that Prof. Allen will be glad when his work there is finished and the year of his exile is ended.

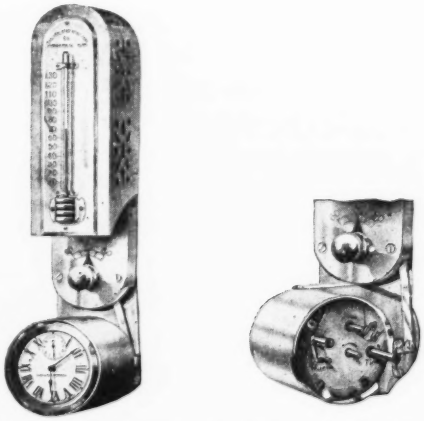
THE M. I. W. FLOOR-FLANGE.

The Modern Iron Works, Quincy, Ill., manufacturers of plumbing and steam specialties and sewage-disposal systems, have recently placed on the market an up-to-date and reliable floor-flange as shown in the accompanying illustration. The new device has been named the "M. I. W." floor-flange and it has already become a favorite with those contractors who have had an opportunity to use it. Those of our readers who have not yet seen this new flange are invited to write the manufacturers for further particulars. Kindly mention "Domestic Engineering" when writing.

The M. I. W. Floor-Flange.

THE MINNEAPOLIS HEAT-REGULATOR.

The manufacturers of this well-known apparatus are ever awake to changes and features that add to its convenience and betterment. In the latest 1911 model, the clock-attachment shows several new features that are worthy of note. They are not changes that concern the mechanical operation of the regulator but changes of convenience and help in the adjustments and winding of the clock-attachment. Originally the time-attachment was made with merely a single swing-hinge. Later the clock was made detachable. Now it has been finally perfected by constructing it so that it swings in a complete circle and is also entirely and instantly detachable.



The 1911 Time Attachment for the Minneapolis Heat-Regulator.

The new winding features are also of interest. All windings, as well as setting of time and alarm, are performed with one and the same key. The back of the clock contains a socket or receiver for holding the key when not in use, preventing any chance of its being lost or misplaced. Altogether these several excellent arrangements permit the windings and adjustments to be done easily in any position. The Minneapolis heat-regulator has enjoyed a successful sale for over a quarter of a century.

SANITARY BUBBLING DRINKING-FOUNTAINS

The accompanying illustration shows an up-to-date sanitary drinking-fountain adaptable for use in public-comfort stations, public buildings, schools, factories and parks. This fountain is known by the trade-name, "Ashton," and it is manufactured by the Ashton Valve Co., 271 Franklin St., Boston. Fig. 1 shows the non-squirting type with convex top, made in such a manner that it is impossible to squirt water by placing the finger over the nozzle. Whenever this is attempted all the water passes downward through the small holes in the side, shown in the illustration. This fountain is made entirely of high-grade, non-corrosive composition metal with smooth nickel-plated finish. No dirt or other sediment can collect in the bubble, as there is a continuous circulation and overflow while it is in use. It cannot be tampered with or taken apart. All joints are made permanent, as it is never necessary to make any changes or adjustments to the interior of the bubble. Fig. 2 shows a handy method of connecting the fountain. The bent pipe and coupling makes a flexible arrangement, as these fittings can be made to any specification in regard to size and thread, and the bend can be made so as to place the bubble at any desired position. The manufacturers will be glad to send interested parties full particulars upon request, mentioning "Domestic Engineering."

Fig. 1.

Fig. 2.

THE DU-STRIP SANITARY SEAT.

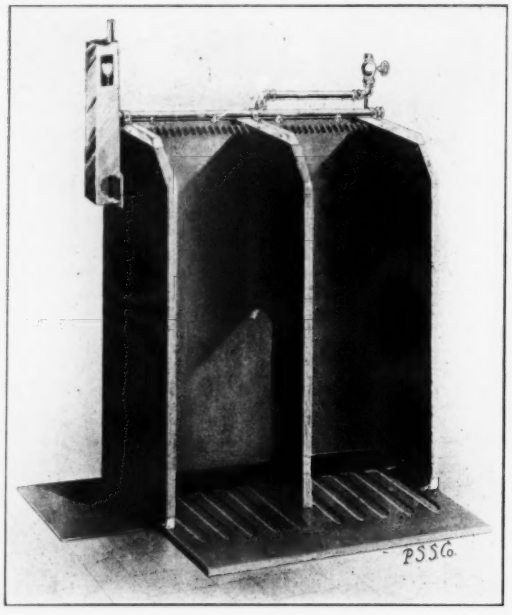
One of the latest sanitary devices offered to operators of public-comfort stations and all public places where the attendance is large and constant, is the Du-Strip sanitary seat. As will be noted by the illustration, it has two horn-like pieces of wood at the ends of which are receptacles for holding rolls of paper. The user draws out the slip of paper to the length of the horn, thus securing a sanitary surface, the skin never touching the wood. When

The Du-Strip Sanitary Seat.

used, the paper is torn off and the next user gets fresh slips. The construction of the device provides for the most economical use of paper. The seat is supplied in any wood and finish to meet all requirements. It is receiving favorable consideration from a number of enterprises, such as railway depots, office and municipal buildings, hotels, schools, factories, etc. Full details can be secured upon application to the manufacturers, the Sanitary Seat Co. (not inc.), 21 S. Wabash Ave., Chicago. Mention "Domestic Engineering" when writing.

URINAL STALLS FOR PUBLIC-COMFORT STATIONS.

In the men's sections of public-comfort stations nothing is of more importance than sanitary urinal stalls. To be absolutely sanitary these must be constructed of nonporous and homogeneous material which will not absorb any impurities or any other substance. To fill this requirement the Penn'a Structural Slate Co., Easton, Pa.,



Urinal Stalls Suitable for Public-Comfort Stations.

is making a specialty of the manufacture of self-ventilating urinals in both single and double ranges of slate. The single range is placed against the wall and the double in the center of the room. These fixtures commend themselves because they can be kept clean with a minimum of labor, and they are very durable as they are made of slate from the Bangor slate vein, the strongest slate known.

OBITUARY.

Thomas Francis Byrne.

Thomas Francis Byrne, senior member of the plumbing and engineering firm of Byrne & Murphy, died on October 2d at his home, 105 East 79th St., New York City. His death was due to nephritis, after a month's illness. Mr. Byrne was born in New York 45 years ago, and was educated in the public schools and the School of Mines of Columbia University, intending to become a mining engineer. Soon after his graduation he became interested in building work, and finally decided to continue in that line. The firm of Byrne & Murphy is one of the best known in the city and for many years has had practically its choice of work in the important buildings, having made installations in the subway, the Ritz-Carlton hotel and the Singer building. Mr. Byrne was the author of several books which are considered standard authorities in building and construction work. He was a member of the Building Trades Employers' Association and several other clubs and societies. He leaves a wife and two sons.

Henry Steggert.

Henry Steggert, well known in plumbing circles, died at his home, 409 Spencer Ave., Carrick, Pittsburgh, Pa., on October 9th. Mr. Steggert was born on the Southside Jan. 26, 1852, and had resided there until a few years ago. He was engaged in the plumbing business for 25 years, retiring about six years ago. He is survived by his widow, three daughters, all of whom belong to the order of St. Francis, two sons, both of St. Mary's Institute, Dayton, O., and three brothers.

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Some time ago "Domestic Engineering's" Book Department received a remittance for books without the name or address of the sender. If this meets his eye we hope that he will communicate with us and advise us of the amount sent and the books ordered. This will identify him and we will send the books at once.

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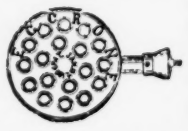
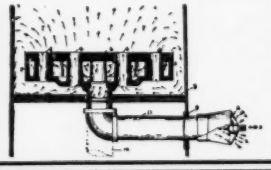
The Crone Gas Burners



can be applied to Steam or Hot Water Heating Boilers, Hot Air Furnaces, Heating Stoves, Cooking Ranges and Range Boilers. They are gas savers, simple in operation and superior heaters. Plumbers and Gas Fitters, who have had any experience with them, say that they are the best safe and reliable burners as well as the most economical—on the market. Write for Prices and Folder to the Patentee and Manufacturer:



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